

DOCTOR MENDINI'S  
HYGIENIC  
GUIDE TO ROME

HÔTEL BRISTOL  
ROME

JOHN J. EYRE

King's College Hospital  
Medical School

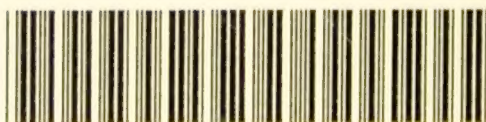
(UNIVERSITY OF LONDON).

Presented by

*Sir John Phillips*  
MA., M.D., F.R.C.P.,

*Emeritus Professor*  
*of*  
*Obstetrical Medicine*

*May. 1921*




22101332241



Med

K26697



Digitized by the Internet Archive  
in 2016

<https://archive.org/details/b28137826>

CANCELLED



HYGIENIC GUIDE TO ROME.





DOCTOR MENDINI'S

# HYGIENIC GUIDE TO ROME

TRANSLATED FROM THE ITALIAN AND EDITED WITH AN ADDITIONAL  
CHAPTER ON

ROME AS A HEALTH RESORT

BY

JOHN J. EYRE

*Member of the Royal College of Physicians; Licentiate of The Royal  
College of Surgeons, Ireland; Diplomat in Public  
Health, University of Cambridge, &c*

LONDON:

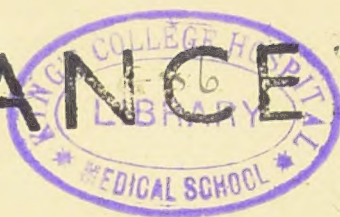
THE SCIENTIFIC PRESS, LIMITED

28 AND 29, SOUTHAMPTON STREET, STRAND, W.C

1897

12-10-50

# CANCELLED



LONDON : THE SCIENTIFIC PRESS, LTD.

WELLCOME INSTITUTE LIBRARY	
Coll.	weIMOmec
Call No.	
	WB





## TRANSLATOR'S PREFACE.

---

The translating and editing of this book, issued within the last year in Rome, has been a great pleasure to me, because by publishing it in English I feel that I shall be the means of more widely diffusing the facts, so diligently compiled by the author, which undeniably prove, not only that Rome is the healthiest of the large Italian cities, but also that it is one of the most healthy cities in the world.

In editing the work I have made alterations both by adding to the text, and, to a much lesser extent, by omitting sentences here and there which I considered of little advantage to English readers. Thus, amongst the additions, I have given fuller and later vital statistics in the first chapter, and a meteorological table in the second, which I hope will be useful to those who make a special study of climate.

I have also written a supplementary chapter entitled "Rome as a Health Resort," which I trust

will be acceptable to those members of the profession who have to advise their patients in the selection of a winter residence, as well as to the general reader.

My grateful thanks are here given to my friend, Dr. A. B. Stevens, M.A., M.B., Oxon., who has kindly read the proof sheets, and has also been of great help to me in many ways through my living at such a distance from the publishers.

JOHN J. EYRE.

31, Piazza di Spagna.

Rome, June, 1897.

PREFATORY LETTER  
BY PROFESSOR G. BACCELLI.

---

DEAR DR. MENDINI,—

Destroying the fable of the unhealthiness of Rome by means of the undeniable facts demonstrated not only by the statistics of the city, but also by the statistics of Rome compared with the other capital cities of Europe, as you have done in this book, is not for us an interested love of country, but a homage due to the bare and clear truth.

When, in 1894, eight thousand scientists from all parts of the world celebrated in the Capital of Italy the Eleventh International Medical Congress, they saw with their own eyes the robust health of the citizens who welcomed them, as the representatives of the most humanitarian science, with vivid affection.

They visited our hospitals and laboratories, took note of all matters in relation to public health, and, most competent judges and witnesses, put

an end to a calumny which struggled not only with truth but with the paradisaic beauty of our sky.

I also have interested myself in the endeavour to dissipate from the minds of all this unfounded dread and unreasonable suspicion. I have done it in my clinical lectures, in hygienic articles on Rome published since 1870 in the "Opinione," and in my work "Igiene di Roma," awarded a prize at Paris.

May your excellent work efficiently co-operate to the end that we all desire of confirming the ancient judgment found written by our fathers in the book "de Republica," when they congratulated Romulus on having founded his city in a place "rich with waters and extremely healthy."

Believe me, yours,

G. BACCELLI.





## AUTHOR'S PREFACE.



THE complete knowledge of the surroundings in which one lives constitutes a desire never fully satisfied. Sometimes his natural inclination induces man to study above all the social life which surrounds him ; at others the artistic or natural beauties of the place attract him, or the scientific conditions, if he be greatly inclined towards science ; but there is one thing which every one without distinction desires to know, whether he be a politician or an artist, a scientist or an ecclesiastic, a person given to industry or to commerce, and that is the influence the environment has on one's health.

Everybody knows that there are inhabited centres, where men normally reach a good old age, whilst there are others in which death decimates human lives with ruthless voracity.

When one has to deal with a small village, the conditions of its healthiness are readily manifested, and one can discover them by only remaining there a few hours. If one goes to the door of the church

on feast-days, and carefully examines the people who come out, he will readily learn from the physical appearance of the inhabitants whether that place is healthy or unhealthy ; a few leading questions to the pharmacist, the doctor, and the priest, will place him in a position to judge, and nine times out of ten the judgment will not be wrong.

But in large cities the condition of things is very different ; an infinite congeries of circumstances intervene, and render a judgment founded on superficial investigations doubtful ; the modes of life, immigrations from other places, vice, are coefficients which have an influence on the general physical appearance of the inhabitants of a city ; hospitals and charitable institutions sensibly alter the visible proportions of the healthy and the diseased.

Here the judgment can only be founded on an analytical study of all the factors which tend to modify, for good or evil, human life ; without this the judgment would be generally erroneous.

Such a study, as far as concerns the city of Rome, we offer the reader.

Many persons have written about its conditions of healthiness, and we have made free use of their conscientious and diligent studies, as also of the most certain and recent statistical data.

These works, drawn up in an essentially scientific form, have not reached the hands of the public, through which, up to now, there has been, even amongst the educated classes of the city, an incomplete knowledge concerning the salubrity of the city of Rome.

We have accurately examined most of the writings on this important subject, we have endeavoured to make a faithful synthesis, drawing from the data and the comparisons those inferences which have appeared to us most logical and undeniable.

We have arrived at an altogether unexpected conclusion, because we also partly suffered from the common prejudice that the city of Rome was not completely healthy. We have, instead, discovered, and with all certainty have proved, that *Rome is the healthiest of the large Italian cities*. If the courteous reader will have the patience to follow us to the end, he will find an undeniable proof of this, and he will not be displeased to know that the great Mother Rome, which, at one time, gave birth to the dominators of the world, offers also to-day to her sons conditions of life, which it is sufficient for them to know to profit conveniently thereby.





# CONTENTS

## CHAPTER I.

	PAGE
ROME AND ITS ABSOLUTE HEALTHINESS . . . . .	I

## CHAPTER II.

THE CLIMATE OF ROME . . . . .	20
-------------------------------	----

## CHAPTER III.

THE WATERS OF ROME . . . . .	39
------------------------------	----

## CHAPTER IV

THE SEWERAGE OF ROME . . . . .	63
--------------------------------	----

## CHAPTER V.

THE CONDITIONS OF HABITABILITY . . . . .	73
--	----

## CHAPTER VI.

FOODS AND DRINKS . . . . .	87
----------------------------	----

## CHAPTER VII.

ROME AS A HEALTH RESORT . . . . .	103
-----------------------------------	-----

## CHAPTER VIII.

HYGIENIC SERVICES AND SANITARY AID . . . . .	117
--	-----

## CHAPTER IX.

	PAGE
CHARITABLE INSTITUTIONS AND SANITARY PRO- VISION . . . . .	143

## CHAPTER X.

FUNERAL SERVICES . . . . .	166
----------------------------	-----

## CHAPTER XI.

SCIENTIFIC AND PROFESSIONAL AUTHORITIES AND INSTITUTIONS . . . . .	182
---	-----

HYGIENIC GUIDE TO ROME.





CANCELLED

# THE HYGIENIC GUIDE TO ROME.

---

## CHAPTER I.

### ROME AND ITS ABSOLUTE HEALTHINESS.

“This is a corner of the earth blessed by God.”—PIUS IX.

“THE climate of Rome in its particular characteristics is excellent, and is favoured by nature. It is sufficient to observe the robust appearance of its inhabitants, their sprightliness, and very florid colour in the winter months, to admit that it does not yield to the most healthy city in the world. The people of other countries know it, and go there in large numbers for the rigorous period of the year. Its sky is proverbially limpid, the temperature is moderate, extreme cold is unknown in winter, and there are rarely more than five or six days when the thermometer descends a few degrees below zero [centigrade]. In the summer months we have not the extremes that other countries with the same latitude have, and its variability of temperature (although we have much to deplore), after having given the subject special attention, I have found much less than in most of the surrounding districts. Rome, being situated at a little distance from the sea, has the continental climate predominating, but not to such an extent that it

does not also feel the advantages of a maritime climate. The south-west winds, which in the summer refresh the afternoons, are the effect of this vicinity, and they pleasantly moderate the heat that the reflection and the proximity of the mountains on the eastern side, and its low position tend to accumulate in its valley. The distance from the mountains is such, that we are little subject to the destructive hail-storms, which are so frequent in those places situated at their feet. Mists are rare; the rains are, as a rule, frequent and well distributed; the waters are excellent, both those which feed the wells, and those which ornamentally and usefully discharge from the public and private fountains. The flocks are vigorous and abundant, and, consequently, meat is plentiful, healthy, and varied; game, even the rare kinds, abounds in the surrounding woods, so that, from the statistics made for this purpose, it results that Rome is the city in which every citizen can use meats more abundantly than anywhere else. Fruit is very plentiful and delicious, and wonderfully varied and special in all seasons, nor are very wholesome vegetables ever wanting."

He who wrote these words was Father Secchi, and we have quoted them because on the excellent qualities of the Roman climate, this eminent scientist—who, for a long series of years, explored the surroundings of the Observatory of the Roman College—had the greatest right to speak.

But notwithstanding that the inhabitants of Rome are convinced of the healthiness of their climate, and notwithstanding the explicit judgment of competent persons, the prejudice that Rome is an unhealthy city, and that its suburbs are injurious to the health of men, is very wide-

spread. There are persons in Italy who will not accept advantageous positions in the Capital because they dread the unhealthiness of the air ; there are strangers who, coming into Italy from the countries of Europe and from distant America to visit our flourishing cities, go directly from the hills of Florence to the Gulf of Naples, passing through Rome by the fastest trains, fearing that a brief stay within its walls would have a hurtful influence on their health.

It is not difficult to discover the origin of this prejudice, and it is easier still to demonstrate that to-day it should no longer exist.

Rome is situated in a territory partly volcanic, and partly alluvial, very rich in waters, and rich in natural vegetation. It has an eminently undulating conformation, and, therefore, although it is traversed by considerable streams, it has not a sufficient natural discharge, and a good part of its waters remain on the surface or in the superficial subterranean strata. To this must be added a rather elevated medium temperature, and one cannot but at least recognise that in this territory there are the normal conditions for the development of the paludal miasma, or *malaria*, as it is also called.

This region then must always have been malarious, even in the times preceding the foundation of Rome.

But the paludal miasma did not impede the erection here and the development of a great city, because in its nature it is a tameable enemy, when one knows the most efficacious means of subduing it.

The art of war against the *malarial Hydra* teaches above all the placing of an encampment on an elevated site. There one is secure from its attacks in all seasons, and from there one can invade the enemy's camp, selecting

the most propitious season. For the campaign to have a favourable result, it is necessary to withdraw from the enemy the essential principle of its life, that is water.

Thus acted the original inhabitants of this territory when Rome was built.

That is to say, they established themselves on the Palatine and the Capitoline hills. There they remained for a long time comfortably, although surrounded, as Dionysius of Halicarnassus relates, by the Velabro marsh, which they crossed in boats, and by Lake Curtius (Roman Forum), in whose miry bed Curtius was lost together with his horse, and by the marsh called *Capra*, which has remained memorable in history, because it was in that place that Romulus disappeared. At that time, and even later, the Campus Martius, Trastevere, Circo Agonale, and the theatre of Marcellus, were all marshy places.

In the course of time the inhabitants of the Palatine and the Capitoline hills found it necessary for their well-being to destroy the surrounding marshes, and for this purpose made use of the most powerful means of sanitation that even at the present time we know — that is sewerage and drainage. They became very able in the construction of subways and cloacæ, and may be held as the first masters of that science which unites the precepts of medicine and engineering, to the profit of public health.

Livy has transmitted to us the history of Camillus Furius, which shows us in no doubtful way the hygienic state of Rome at that time.

He mentions that after the invasion of the Gauls, the



Conscript Fathers had designed to abandon the city and to transfer the seat of the Empire to Veii.

Hygienic reasons must certainly not have been foreign to this decision.

In fact, Camillus Furius addressed a discourse to the Conscript Fathers, in which he accentuated the healthiness of the hills. "It is not without reason," he says, "that the gods and men selected this place for erecting the great city, furnished with *most salubrious hills*, a river suitable for transporting materials from Mediterranean ports; near to the sea, without being exposed to the danger of being attacked by foreign fleets; this place that, in the very centre of Italy, makes one wonder at the increase of the city."

Camillus Furius, however, truly a statesman, not being certain of obtaining his object with these words, had prepared an expedient which would speak a more efficacious language to the superstitious minds of the Romans. He arranged matters in such a way that, during his address, numerous cohorts of the legions should pass through the Forum, and, perhaps with a pre-arranged signal, he ordered the ensigns who led them to give at the suitable moment and with a very loud voice the prescribed *halt: signifer, statue signum, hic manebimus optime*. This cry was considered of *good augury* by the Senate and the people, and they no longer spoke of going to Veii.

By this means, political reasons had the advantage over hygienic ones.

But Livy does not forget to tell us that, the seat of the Empire having been confirmed to Rome, they sought to provide suitable laws for the hygienic improvement of the city, and large concessions were made to the citizens who desired to build; and the discharge of the sewage

of the houses into the cloacæ was permitted—*ea est causa ut veteres cloacæ primo per publicum ductæ nunc privata passim subeant tecta* (Livy, I., c. 55); that is to say, the principle of sending all the refuse of life into the cloacæ was adopted—*tout à l'égout*—a principle which public hygiene, in our times, has confirmed as being the best, after long and serious discussions in almost every capital of Europe.

In this way the city became very healthy, and there grew up a people whose physical robustness cannot be doubted, since it conquered the inhabitants of the most healthy mountains of Umbria, Abruzzo, and Campania, and imposed its laws with extreme vigour upon them.

Even the surrounding territory, placed under a rational *régime*, was cultivated for a long succession of centuries by an industrious agricultural population. They furnished the legions which conquered all the countries then known. In those days when Rome was the Capital of the world, its territory became in great part a delightful sojourn.

In this centre was gathered an immense population which, if it did not reach two millions as some believe, must have been very large, when they required fourteen imposing aqueducts, the baths of Caracalla and Diocletian, the Circus Maximus, built for 285,000 spectators, the Amphitheatrum Flavium (the Colosseum) for 87,000, and the Theatre of Marcellus for 20,000.

It is not possible to conceive a population so dense, arrived at the height of civilization and wealth, in a city which was not completely healthy.

This population then had triumphed over the malaria, and rendered healthy a whole district originally unhealthy.

But after the fall of the Empire under the encounters of the barbaric invasions, the state of things became modified.

When the aqueducts were destroyed, the forests cut down, the rural houses ruined, when the security of the agriculturists had ceased, and the *régime* of the waters was neglected, the suitable conditions for the development of the paludal miasma were found anew about Rome; the *Campagna* gradually became depopulated, and the entire region acquired the fame of being unhealthy, which it has never since lost.

It must not be considered, however, that the city had become as unhealthy as the surrounding country. This it never has. Although the air partly lost its exceptional purity, it never became altogether unhealthy, because the splendid sewerage works executed by the ancients, the enormous constructions, and the paved streets, always opposed the invasion of the malarial germs.

The Pontiffs, the heads of Christianity, who had selected this place for their residence, could have found a more suitable site for their Evangelical mission, if they had had to contend against powerful disease-producing agencies.

After the darkness of the Middle Ages had disappeared, the restoration of some of the aqueducts, and the most important sewers, and the completion of the edilic works which appeared most efficacious for assuring the healthiness of the city were energetically taken up by the Popes; thus the sanitary condition of Rome was continually being improved, and the inhabitants thrive in this city that strangers, misled by the unhealthiness of the surrounding territory, spoke of as being unhealthy.

But still more, the Roman citizens, exercising for centuries assiduous diligence in combatting the slight danger of the paludal miasma, have almost unconsciously arrived at a vantage-ground that the large Italian and foreign cities well may envy.

With the provision of an excellent water supply, well-paved streets, and judicious drainage, they have always been able to calmly observe the fierce epidemics, either slow or acute, which in other places have decimated whole populations. The typhoid bacillus does not flourish here, and that of cholera has respected our walls, or if it has entered them, it has not found a suitable soil for its propagation.

In 1870 arose a combination of interested individuals who depicted the climate of Rome as being pestiferous, and that this city, which, at bottom, even Tommasi-Crudeli included among the most healthy in Italy, was almost uninhabitable, but from that year the population redoubled, and 200,000 Italians from other provinces, after living here for more than a quarter of a century, are persuaded that one dies in Rome as elsewhere, but later.

We now proceed to describe in detail the hygienic conditions of the Rome of our days, which directly concern us.

#### MORTALITY IN ROME AND IN OTHER ITALIAN AND FOREIGN CITIES.

We shall first of all consider the rates of mortality as furnished us by the General Direction of Statistics of the Kingdom, which have been compiled with the greatest exactness, and may be retained as being absolutely correct as they refer to a sufficiently long period of time :

Mortality per 1,000 living in the four years 1891-1894.- Rome, 21·4 ; Naples, 28·7 ; Milan, 25·4 ; Turin, 21·5 ; Florence, 24·5.

These figures have a true value of *comparison*, because they have been made with equal criteria and on identical bases, that is to say, they represent the death rates of a whole population, partly resident and partly non-resident,

whose census was made in 1881, and taking into consideration the increase which has occurred up to 1894.

The comparison could not be more advantageous.

Rome has the lowest rate of mortality notwithstanding that it has been notably raised by the inclusion of the deaths of these peasants of the Agro Romano who came to be treated in the civic hospitals and died there.

That this inclusion produces a larger proportional increase in the death-rate of Rome than that of the other Italian cities, is clearly proved by the following statistics :

Mean Mortality per 1,000 living, of the resident population of the following cities in the four years 1891-94.—Rome, 19·0 ; Naples, 28·4 ; Milan, 23·0 ; Turin, 20·6 ; Florence, 22·6.

In the death from diseases which have a high mortality, Rome never occupies the first place :

Thus the highest mean death-rate from small-pox in the ten years 1882-91 was at Milan, 0·48 per 1,000 living ; scarlet fever and measles at Naples, 0·93 per 1,000 living ; diphtheria at Milan, 0·72 per 1,000 living ; typhoid fever at Milan, 0·48 per 1,000 living ; tuberculosis at Florence, 3·88 per 1,000 living.

The official statistics for the decennium 1884-93 give the mean death rate for the following capital cities :—

ALL CAUSES.—DEATH RATES PER 1,000 LIVING.

CITIES.	1884-93.	1894.	CITIES.	1884-93.	1894.
Rome . . . . .	24·7	19·4	Berlin . . . . .	22·3	18·2
London . . . . .	20·4	17·8	Vienna . . . . .	25·1	22·8
Paris . . . . .	23·3	20·3	New York ..	25·2	21·1
St. Petersburg	29·8	31·4			

From this table we see that the mean death rate of Rome exceeds in the ten years those of London, Paris, and Berlin,

whilst it is exceeded by St. Petersburg, Vienna, and New York. In 1894, however, Rome had the lowest mortality of all these capital cities excepting London and Berlin.

We next give the mean death rate from the six principal zymotic diseases, viz.: small-pox, measles, scarlet fever, diphtheria, whooping cough, and fever in the same period and for the same cities :—

DEATH RATES PER 1,000 LIVING.

CITIES.	1884-93.	1894.	CITIES.	1883-93.	1894.
Rome .....	2·34	1·08	Berlin .....	1·88	1·50
London .....	2·12	2·24	Vienna .....	1·80	2·12
Paris .....	1·96	1·35	New York..	2·53	2·16
St. Petersburg	3·06	3·49			

From this table we see that Rome had in the ten years a higher death rate from the principal zymotic diseases than all these cities excepting St. Petersburg and New York, but in 1894 Rome had the *lowest* death rate from these diseases.

We now give the mean death rates in the ten years 1884-93 and the year 1894 for each of these diseases in the same cities :—

SMALL-POX.—DEATH RATES PER 1,000 LIVING.

CITIES.	1884-93.	1894.	CITIES.	1884-93.	1894.
Rome .....	·37	·00	Berlin .....	·00	·00
London .....	·07	·02	Vienna .....	·19	·01
Paris .....	·07	·07	New York..	·03	·08
St. Petersburg	·14	·10			



From the above we see that the mean death rate from small-pox in Rome in the ten years was much greater than in all the other cities. This is probably due to the long time after birth which has been allowed to elapse before children are vaccinated. In 1894, however, the mortality was absolutely nothing in Rome from this disease, and in the statistics for 1895, which have lately appeared, the mortality was also *nil*.

MEASLES.—DEATH RATES PER 1,000 LIVING.

CITIES.	1884-93.	1894.	CITIES.	1884-93.	1894.
Rome .....	'62	'28	Berlin .....	'22	'20
London .....	'61	'76	Vienna .....	'54	'60
Paris .....	'52	'41	New York..	'42	'30
St. Petersburg	'73	'96			

The death rate from measles in Rome in the ten years was about equal to that of London, and greater than that of all the other cities excepting St. Petersburg. In 1894, however, Rome had the lowest mortality excepting Berlin.

SCARLET FEVER.—DEATH RATES PER 1,000 LIVING.

CITIES.	1884-93.	1894.	CITIES.	1884-93.	1894.
Rome .....	'05	'02	Berlin .....	'21	.26
London .....	'26	'22	Vienna .....	'20	'31
Paris .....	'09	'06	New York..	'50	'27
St. Petersburg	'66	'59			

Here we see that Rome has very much the lowest mortality from scarlet fever, not only in the ten years, but still

more, in the year 1894, this low mortality is lessened more than fifty per cent.

DIPHTHERIA.—DEATH RATES PER 1,000 LIVING.

CITIES.	1884-93.	1894.	CITIES.	1884-93.	1894.
Rome .....	·41	·09	Berlin .....	1·00	·80
London .....	·35	·61	Vienna .....	·66	1·11
Paris .....	·69	·42	New York ..	1·02	1·20
St. Petersburg	·49	1·02			

In the ten years Rome had the lowest mean death rate from diphtheria excepting London, and in the year 1894 the death rate in Rome from this disease was very much less than that of all the other cities mentioned.

WHOOPIING COUGH.—DEATH RATES PER 1,000 LIVING.

CITIES.	1884-93.	1894.	CITIES.	1884-93.	1894.
Rome .....	·09	·09	Berlin .....	·32	·20
London .....	·66	·48	Vienna .....	·12	·04
Paris .....	·18	·10	New York ..	·30	·14
St. Petersburg	·23	·33			

The death rate from whooping cough in the decennium was lowest in Rome, and in 1894 it was also lowest excepting Vienna. This is generally a very mild disease in Rome.

Now, if we take the mean death rate for the above-mentioned zymotic diseases in the ten years 1884-93 in the seven cities combined, we find that Rome exceeds the mean in the deaths from small-pox and measles, whereas

in those from scarlet fever, diphtheria and whooping cough, it is below the average. The greater death rate from small-pox is to be accounted for in that vaccination was not made obligatory in Italy until 1888, when the Public Health Act for Italy came into force, and also from the fact, already mentioned, that a large proportion of the children are not presented for vaccination within the first year of birth. Matters in this direction are now improving, as it is necessary for all children who attend the public schools to present a certificate of vaccination, and of re-vaccination if they are beyond eight years of age.

These various tables clearly show that Rome has a very moderate mortality from zymotic diseases, and that whilst some of the large cities mentioned have had in the decennium a less mean zymotic death rate, others have had a greater than Rome.

As these infective diseases appertain to the large class of *avoidable diseases*, that is to say, those diseases which a good sanitary *régime* can keep at a distance, one must conclude that Italy, in reference to its sanitary laws, was in the decennium inferior to some of the other nations.

And we must frankly confess it was so, as it is only within the last eight years that we also have been on the road of progress, but Italy now possesses a sanitary legislation, which places her abreast of the other civilized nations.

The advantages of this new arrangement are already manifested, and in consequence of the same, the mortality is gradually diminishing, as the following figures indicate :—

DEATHS PER 1,000 LIVING IN ALL THE KINGDOM. --1886, 28.72 ; 1887, 28.01 ; 1888, 26.64 ; 1889, 25.71 ; 1890 (influenza), 26.47 ; 1891 (influenza), 26.29 ; 1892 (influenza), 26.37 ; 1893, 25.31 ; 1894, 25.19.

Naturally the rate of annual diminution is small, because the carrying out of the hygienic laws is very slow, but the constancy of the improvement is a guarantee of the value of the system.

Besides, the mortality of a country is necessarily subordinate to its economical conditions. Where life is difficult, food scarce and unsuitable, the mortality is always greater, other things being equal. Unfortunately the economic conditions of Italy in these later years, have not improved to such an extent as to permit of a greater diminution in the death rate.

Rome, more than every other city, is destined to feel the advantages of the new hygienic *régime*, because besides making use of all the defences which sanitary science has suggested against the *preventable* diseases, it has recently undergone a most notable edilic transformation, and it has almost completed its splendid sewerage system, and that truly grandiose work, the embankment of the urban portion of the Tiber. These works will honourably transmit to our descendants the memory of the Administrators who have directed in these later years the destinies of the Eternal City, and will make Rome, in the course of a few years, the most healthy city in Europe, as it is, and has been up to now, the most healthy in Italy.

#### THE PHYSICAL ROBUSTNESS OF THE CITIZENS.

Not content with having given the figures of mortality, which prove the sanitary well-being of the inhabitants, we desire to offer a confirmation, deduced from the study of their physical vigour.

It is well known that the physical qualities, and in part also the moral qualities of the inhabitants of a

district, essentially depend on the influences exercised upon them by the atmospheric and cosmotelluric agencies in the midst of which they pass their life. This fact is quickly observed by anyone who undertakes the study of the hygienic conditions of a population, but it is also very evident by its nature, as has been shown and engraved with classic phrases by historians, poets, and philosophers.

Herodotus has said that ugly countries produce bad citizens — *ἐκ των μαλαχων κωρων μαλαχους ανδρας γενεσθαι*.

Cicero says that the Ligurians are strong, rugged, and tenacious, because their lands are unproductive, *nisi multa cultura et magno labore quæsitum*, and that the Neapolitans are proud, on account of the richness of their fields, and the abundance of the crops.

Tasso, in “Gerusalemme Liberata,” says :—

*La terra molle e lieta e diletta,  
Simili a sè li abitator produce.*

In a word, climate modifies human nature, sometimes favouring its vigorous development, at others opposing the regular evolution of the organic functions.

Hence the difference of nations in their physical habits, and their psychical manifestations.

If we desire then to obtain the index of relative healthiness of two countries, we take certain groups of their inhabitants at twenty years of age, and we compare their stature, chest measurement, proportions of the limbs, acuteness of the senses, and the state of the intellectual faculties. After twenty years, one can be certain that the environment has already exercised its action for good or evil on the individual, so that the latter is moulded by the former.

For the comparison to be legitimate and efficacious, it is necessary that it be made in conditions practically identical, and these are offered to us, best of all, by the examination of the young men who yearly present themselves at the military conscription to be passed into the army. Their admission into the military service may be taken as an index of robustness, and we can call that district most healthy which gives the greatest proportional number capable of bearing arms. It is known besides that this admission takes place on a single criterion, and by army surgeons who always follow the same method. The youths are all of the same age, appertain to all classes, and almost all were born and lived for twenty years in the same place.

The data are, therefore, absolutely homogeneous.

The following is the result of this comparison made by us on a total of 290,000 men examined in the decade 1880-1890, in the cities of Rome, Milan, Florence, Naples, and Turin.

Citizens excluded from Military Service through physical inability (proportion per cent. of those examined).—Rome, 19·68; Milan, 20·55; Florence, 20·88; Naples, 20·88; Turin, 21·99.

The general mean of the ten years for all Italy is 21·96.

Thus Rome gives a number of citizens capable of bearing arms superior to that of all the other great Italian cities, and to that of the general average for Italy, including the large numbers furnished by the salubrious maritime districts, the healthy plains of Emilia, and the smiling hills of Umbria and Tuscany.

After this, can it be said that the capital of Italy is unhealthy?



RELATIVE HEALTHINESS OF THE SEVERAL  
QUARTERS OF ROME.

Having demonstrated what the healthiness of the Rome of to-day is, it would seem useless to enquire into the greater or less healthiness of its various quarters. As, however, even here, as in all other large inhabited centres, there are some localities where public health is better cared for, it will not be unacceptable to the reader to know them.

Taking the Piazza Colonna as the centre, and that portion of the *Corso* which extends to the Piazza Venezia as the radius, all the district included within the circumscribed circle is healthy.

The Pontifical house, now the Quirinal, was healthy even in remote times, when the habitations towards the Piazza Barberini and the *Circa thermas Diocletiani* (Donie) which at present are renowned for the goodness of the air, were less healthy. The Corso Vittorio Emanuele, Via Viminale, Prati di Castello, Borgo, S. Pietro in Vaticano, the Ludovici quarters, and the Macao are healthy. The Via Nazionale, Via Venti Settembre, S. Maria Maggiore, and the neighbouring districts are very healthy. *Nunc licet esquilis habitare salubribus* is written with reason on the little palace at the corner of the Via Depretis and Via Urbana.

It is a remarkable fact that these places, nowadays recognized as being so healthy, before 1870 were marked on the maps as being less healthy than the central parts of Rome, whilst in ancient times there were in the Esquiline zone 170 palaces, many temples, a circus, a nymphæum, 75 bathing establishments, the gardens of Mæcenas, and the villas of illustrious patricians. These sites now give a

mortality which is much less than that of London or Berlin. This is due without doubt to the excellent condition of the buildings, including good drainage, and the suppression of the gardens which were more or less cultivated and drained.

A very remarkable improvement has also been obtained in the region occupied by the Jews. To-day this quarter has almost disappeared under the pickaxe of the demolisher, and in its place arises the quarter of Via Arenula and the Piazza Cairolì, which is also amongst the most healthy in the city. The island of S. Bartolomeo is not very healthy. Some areas beyond the Colosseum also leave something to be desired, through the neglect into which these places have fallen, formerly inhabited by a flourishing population, if one may judge from the ruins of the imposing monuments which appear there.

The mortality is also sufficiently notable in the Trastevere quarters, around S. Grisogono, inhabited by a very dense population, chiefly the working classes. The comparison of its death rate with that of S. Bernardo Alle Terme, proves how false is the assertion that death passes equally through the threshold of the rich and that of the poor, and it is an admonition for the intervention of the ruling classes to render the situation less sad.

The banks of the Tiber have become more healthy since the magnificent work of its embankment has been undertaken within the city walls, and the destruction of the buildings which there accumulated during the course of centuries.

The public gardens of Rome can be frequented with impunity even in the evenings. Popular prejudice alludes to the excessive humidity, and the danger of fevers in those

places, but we do not hesitate to say that the Pincio, planted and drained as it now is, is absolutely healthy, and not in the least humid. The Villa Borghese is healthy, although in the evenings a little damp. The Janiculum has wrongly been stated to be malarious, as the families who live there during the whole year in perfect health can bear testimony.

Of the quarters outside the Aurelian walls, those of the Porta Pia are among the most healthy, so much so that the villas of leading families and illustrious physicians are there situated.

## CHAPTER II.

## THE CLIMATE OF ROME.

## ATMOSPHERIC PRESSURE.

THE medium atmospheric pressure observed at the Roman College equals 761·9 millimetres.

An absolute *maximum* of 779·2 millimetres was recorded in November, 1869, and a minimum of 736·3 millimetres in December, 1875.

On examining the records of the daily observations, we see that the months of greatest barometric variations, and, therefore, most windy, are from October to April, when the great European gales pass more to the south.

As to the correlation between the barometrical indications in Rome and the probability of rain, it results from an accurate study made by Father Lais, that it is not constant for the same barometrical height in the different seasons of the year; thus, as a rule, in the year the variable corresponds to between 755 millimetres and 759 millimetres, in summer between 755 and 764, and in winter it is a little beyond 760.

## THE RAINFALL.

The observation of a long period of years, extending from 1825 to 1891, gives the following results :

The greatest quantity of rain in one year was 1050·3 millimetres (1872).

The minimum quantity was 319·4 millimetres (1834).

The average yearly rainfall is 778·2 millimetres.

The average number of days in which rain falls in the year is 96·4.

TABLE I.—TEMPERATURE, HUMIDITY, CLOUD, RAIN &amp; WIND.

	Temperature.			Relative Humidity. Mean Percentage.	Cloud— Percentage of.	Rain.		Wind. General Direction in decreasing scale.
	Mean.	Mean Max.	Mean Min.			Amount in Millimetres.	Number of Rainy Days.	
	Fahr.	Fahr.	Fahr.					
January .....	43·8°	52·0°	39·1°	72	50·4	79·7	10·2	N. S.
February ....	46·4	54·6	40·4	70	48·8	58·0	8·6	N. S. W.
March.....	50·5	58·6	43·6	66	55·0	65·0	10·1	N. S. W.
April .....	56·8	65·4	48·2	65	45·6	65·5	9·7	S. N. W.
May .....	64·4	73·6	54·9	60	42·9	55·0	7·7	S. N. W.
June .....	71·2	80·8	61·2	58	34·5	38·8	5·7	W. S. N.
July.....	76·6	86·2	65·6	53	18·4	15·5	2·1	W. N. S.
August .....	76·0	85·8	65·6	56	20·9	27·4	3·3	S. N. W.
September ...	70·8	79·4	61·2	63	33·5	73·5	7·3	N. S. W.
October .....	61·1	69·9	54·0	70	46·5	108·7	9·9	N. S.
November ...	52·0	59·3	46·0	73	54·2	107·3	11·4	N. S.
December ...	46·0	52·5	40·0	74	51·5	83·8	10·4	N. S.
Annual Mean	60·0°	69·8°	51·6°	65	41·8	778·2	96·4	N. S. W.

On comparing the rainfall during a long period of years in the large Italian cities, one observes that it is least in Rome.

Thus the mean rainfall is, in Rome, 778·2 millimetres ; Milan, 1003·7 millimetres ; Florence, 890·1 millimetres ; Turin, 847·0 millimetres ; Naples, 823·0 millimetres.

The number of days in which snow falls is even proportionately less in Rome, excepting Naples, as is seen by the following figures :

The average number of snowy days in the Quinquennium 1889-93 was in Rome, 2·0 ; Naples, 2·0 ; Florence, 4·0 ; Milan, 8·4 ; Turin, 8·4.

The snowfall in Rome never exceeds 4 inches, and lasts for a few hours only. Some years it does not snow at all ; so that the municipal authorities have not organized a special service to clear the streets of snow. The sky in this respect is clement, but some suitable preparations for clearing the footpaths from the little snow which falls are desirable.

#### HUMIDITY.

The annual mean of relative humidity, or fraction of centesimal saturation is, 65·0 per cent.

The maximum of relative humidity occurs in the months of November, December and January, with a mean value of 73·0, and the minimum in the months of July and August, with a mean value of 54·5 per cent.

In general, the climate of Rome in respect to the hygrometric state, is not excessive, but very moderate ; this condition must be attributed to the regular succession of the land and sea breezes, and to Rome being situated



at an equal distance from the more elevated mountains and the sea.

Comparing the relative humidity with other Italian Cities, we get the following figures:—Rome, 65 per cent. ; Florence, 64 per cent. ; Naples, 69 per cent. ; Milan, 70 per cent. ; Turin, 70 per cent.

The opinion is general that the air of Rome is excessively humid ; this error is due to the fact that the few Romans who are accustomed to arise in the early morning often see a thick mist even in the height of summer. This, according to the common opinion, is supposed to be due to the presence of an excessive quantity of aqueous vapour in the air, but, as a matter of fact, it is really due to the privilege that the climate of Rome has, of a rather low nocturnal temperature. In consequence of this, the aqueous vapour becomes visible in the form of *mist*, which, from the hygienic point of view, is completely innocuous ; and we, who to nocturnal coolness are debtors for the tranquillity of our slumbers, will not give excessive importance to this fugitive meteorological phenomenon.

#### TEMPERATURE.

The mean annual temperature is  $60\cdot0^{\circ}$  Fahr. A maximum of  $97\cdot5^{\circ}$  Fahr. occurred in August, 1877, and a minimum of  $21\cdot8^{\circ}$  Fahr. in January, 1869.

The temperature rapidly increases in the morning and more slowly descends in the evening.

In the summer it is maintained towards 9 p.m. so that it sometimes appears as if a second maximum takes place at that hour ; this is to be attributed, according to the opinion of Father Secchi, to the condensation of the aqueous vapour, which, at that hour, is very copious.

This condition for a certain time, if the temperature of the air does not increase, may at least impede its descent, on account of the latent heat developed in the change of the state of the vapour, which falls in the form of dew.

The hour of the *maximum* is almost invariable in the summer and winter, in serene days, and corresponds to a little after mid-day, and not to towards 3 p.m. as in other parts of the Continent. This must be attributed to the fact that the marine breezes commence to blow soon after noon, and reach their maximum at 3 p.m.

The *minimum* temperature undergoes notable variations; it generally corresponds to the sunrise.

The difference of temperature between the diurnal and nocturnal hours is very accentuated, and is greater than the difference which is observed in some of the other large Italian cities. This oscillation is particularly advantageous in summer, because it brings a beneficial coolness to the organism, tired by the diurnal heat.

But, in consequence of this lowering of the temperature, it is not wise to leave the windows of the bedrooms open at night, and the use of some light covering should not be neglected. Those who disregard these precautions will not run serious risks, but they may be subjected to more or less acute intestinal disturbances in consequence.

The sun-maximum thermometer at mid-day gives in the summer months an average of  $21.8^{\circ}$  Fahr. over that of the thermometer in the shade, and in the winter months only  $12.6^{\circ}$  Fahr. The instrument thus observed does not give, according to Father Secchi, the direct power of the solar rays, but its indications principally depend on the temperature of the air. In cloudy days

it may be very high, and in clear and fresh ones it remains much lower.

#### THE WINDS.

The dominating wind in Rome is the north (*tramontana*), which blows 371 times in a thousand observations, usually in the morning, excepting those days when it blows rather strongly for 24 hours. It is a fresh wind, sometimes very cold, but bracing and beneficial for healthy individuals. After the north come the south 246 times, and the west 176 times in a thousand.

The scirocco (south-east wind) blows on an average 19 times in a thousand, and it is fortunate that it is so rare, because it is a warm, humid and enervating wind. When it is very strong it may bring with it a little of the reddish sand of the African deserts. The east wind is not frequent (50 times); but if it blows for a longer time than usual it indicates a change of weather.

To the southerly winds corresponds the lowering of the barometer, and its raising corresponds to the northerly winds. The maximum velocity of the wind corresponds to the minimum of the barometrical column, and this well-ascertained fact is valuable, for the prevision of gales.

The changes of the wind in Rome are well determined by the vicinity of the mountains and the sea, so that in the morning we have a land breeze and in the afternoon a sea breeze. These conditions are especially noticeable from May to September, and give the climate of Rome a dominating maritime form.

#### VELOCITY OF THE WIND.

The knowledge of the velocity of the wind has the greatest hygienic importance, both for healthy persons, and more particularly for invalids.

Many rheumatic maladies are produced by sudden chills, caused by the movement of certain winds, and not a few diseases of the eyes and the respiratory organs are due to the dust of the streets raised by the wind.

In compensation, however, ventilation determines the continuous change of the air, removing the vitiated air and substituting other, more oxygenated and purer.

Rome in this respect is in excellent conditions. It is well ventilated, so that in the streets and houses the air does not stagnate, and the wind very rarely blows so impetuously as to become a possible cause of diseased alterations of the organism.

Concerning the injuries determined by the dust of streets, they exist here to a certain extent, more particularly in some of the new quarters, which, although excellently macadamized, produce more dust than the streets in the more central parts of the city, that are all paved and kept in a very clean condition.

With reference to the movement of the wind, the following are the results of Father Secchi's observations for a long period of years :—

The daily velocity of the wind in Rome varies from 0 kilometres to a maximum of 1,256 kilometres (785 miles) with a mean of 200 kilometres (125 miles).

From month to month the variations are very small, whilst on the other hand the distribution of the wind in the day is very varied.

The hourly mean movement of the wind is 8 kilometres (5 miles), which is a light breeze ; the maximum is 80 kilometres (50 miles) ; this corresponds to a moderate gale in the descriptive names used by the British Admiralty.

The daily velocity varies in summer and in winter. In the months of May, June, July, August, and September, there is a constant strong daily increase, and a large nightly diminution. The minimum velocity is about midnight, and the maximum towards 3 or 4 p.m. This afternoon wind in the summer is nearly always south-west, and is a true sea breeze.

In the months of March, April, and October, the minimum is also towards midnight. In January, February, November, and December, the minimum occurs between 9 and 10 p.m.

The maximum in the winter months is strongly influenced by the storm winds, but it may, however, remain observable at the same hours as in the summer months.

#### THE GALES OF THE ROMAN CLIMATE.

Professor D. O. Lais has published the following results concerning the extraordinary changes of the climate of Rome ; they refer to observations made for about a century.

The winter gales are produced by the atmospheric changes induced by the Gulf Stream, and the equatorial current of San Rocco. These winter gales follow one another and reach Rome, the first from the north-east of Europe, and the second from the Gulf of Gascony.

But there are other periodical gales which commence in May, and extend to the whole of October, and are known in Rome by the popular names *burriane*, *temporali*, *tropee*.

The *May gale* usually occurs between the 12th and 18th of the month in which the feasts of Saints Gervase, Pancras, and Boniface fall. This gale has occurred 64 times in 72 years.

The *June gale* usually occurs from the 1st to the 10th of the month. It is due, according to Father Secchi, to the immense column of warm air, loaded with moisture, which reaches our latitude from the great African Continent. It has occurred 63 times in 72 years.

The *July gale* takes place between July 25th and August 3rd.

The *August gale* occurs in the third decade of this month, and is known by the name of "the gale between the two Madonnas." Its probability is 60 times in 72 years.

The *September gale* is known under the name of St. Michael's, and occurs between the 19th and 29th of the month. It has been observed 65 times in 72 years.

The *October gale* takes place in the third decade, and is accompanied, as a rule, with a heavy rainfall.

Even in November, Rome, contrary to what happens in Northern Italy, has some windy days. These various gales are, however, never very violent, as is proved by the maximum velocity of the wind, which has been only 50 miles an hour, or a moderate gale.

Hail rarely falls, and only in small quantities. Large destructive hail-stones hardly ever occur in Rome.

These meteorological conditions, which we have endeavoured to faithfully summarise, clearly indicate that the climate, as a whole, is rather variable. It has been said that at Rome in one day we may have the changes of the four seasons of the year. Although this is an exaggeration, still it is true that the rapid passage from heat to cold is anything but unfrequent.

From this one deduces the hygienic precepts which he who values his own health should attend to.



In the first place he should wear flannel underclothing, which renders the skin less sensitive to changes of temperature ; it is also advisable to carry a wrap or light overcoat on one's arm during the winter months to put on in case of a sudden fall in the thermometer. Flannel next the skin should be always worn in Rome, not because the flannel has the virtue that some pretend, of retaining in its fibres the palustral miasma, which would find a more free and spacious entrance through the respiratory organs, but because wool is a bad conductor of caloric, and it efficiently protects the skin against rapid atmospheric changes.

#### MALARIA.

By the word *malaria* is usually meant the *specific agent*, which is capable of producing in man a particular form of fever, with an intermittent type. It is only within the last few years that one could say with sufficient certainty that this specific agent is a *micro-organism*, which attacks the red corpuscles of the blood.

How the micro-organism is produced, no one at present knows. It was for a time believed that it lived solely in stagnant waters, but now it has been placed beyond doubt, that it also exists in the earth, and it is known that a temperature of 68 degrees Fahr., a moderate degree of permanent humidity of the soil, and the direct contact of the air with the soil which contains it, are favourable conditions for its development.

#### IMMUNITY OF THE INHABITANTS OF ROME.

The last condition readily explains why in the city of Rome malaria does not exist. It is very true that the ground on which the city is built contains the malarial ferment, but this ground being covered with an

artificial paving, the contact of the air with the ferment is wanting, and its reproduction, consequently, cannot take place. *We trample upon malaria*, has incisively said Professor Baccelli, and it is true in the real and figurative meanings of the word. Those areas cultivated as gardens would seem to be an exception, but it appears that in these places the malarial germ is extinguished or very much weakened by long and good cultivation. Still it is advisable that the public gardens should have few uncovered beds, and that the culture of arboreal plants and uninterrupted grass plots should prevail. The latter constitutes an almost complete artificial cohibiting stratum, and the former with the evaporation from their leaves, freely subtract the moisture from the soil, absorbing it with their deep roots.

The assertion that malarial fever does not exist in Rome, would appear at the first glance to be contradicted by the statistics published by the Minister of Agriculture, from which it would appear that malaria still exists in Rome, although in rapidly diminishing numbers.

The following are the official figures :

Deaths from Malaria in Rome.—1881, 650 ; 1882, 505 ; 1892, 139 ; 1893, 189 ; 1894, 140.

The deaths for the last three years are much inferior to the mean mortality from malarial fevers in the whole of Italy, which is equal to 54 per 100,000 living, that for Rome being 41 per 100,000 living. This percentage, however, would make a certain impression if it referred to the population resident in the city. But this is not the case. The deaths indicated in the statistics all appertain to the agricultural population, who contract the disease in the Pontine marshes, and in the other mephitic plains of

the Agro Romano, and afterwards are admitted for treatment into the Roman hospitals. Amongst the population resident in the city, there is not a single death from malarial fever.

In the malarial map published by the Minister of Agriculture the various districts of Italy are divided into ten categories, according to the greater or less degrees of mortality per 1,000 living in the years 1890-91-92. Well, Rome is marked with No. 1, that is, the lowest degree, from zero to one per thousand living. With the same number the cities of Naples, Florence, Milan, and Turin are marked, and no one certainly is desirous of including these cities amongst the malarial places.

#### HOW THE MALARIAL PARASITE ENTERS THE HUMAN ORGANISM.

As we have already seen, the *Agro Romano* gives a considerable contribution to this infection. Now, how is it that Rome, situated in the midst of an unhealthy territory, is not subject to its influence?

To explain this fact, it is necessary to investigate the ways by which the *plasmodium malarie* enters the human body.

It has generally been held that the infection is transmitted by means of the air, and the very name of the disease tends to strengthen this supposition.

But has it been proved?

We frankly reply in the negative. The malarial germ is developed in the soil and in stagnant waters, but facts incline us to believe that the plasmodium or malarial germ is not found suspended in the air.

On this point Baccelli says: "*Some winds may have a noxious influence on the organism, through the relations, still obscure, existing between the physical agents of*

*a climate and our organism, but not by the transport of the so-called miasms of marshes."*

And again : — "*The Pontine marshes cannot be imputed as the cause of a single case of fever which has occurred within the walls of Rome. . . . There are places situated between two marshes, as, for example, Genzano, which lies between the Agro Romano and the Pontine marshes, notoriously free from fever.*" \*

The malarial germ then has not self-movement, nor is it transported by the winds. The observers of all ages have said that malaria tends to rest on the surface of the soil, or that, at least in Italy, it is not raised more than 300 metres above the sea-level, but this evidently is not sufficient to explain the fact of the immunity of districts and towns situated in the midst of an infected territory. When a microscopic particle is borne along by the wind, its confines cannot be measured by the metre. It must pass over plains and hills wherever the wind carries it, and penetrate the lungs of men, whether they live a considerable height above the sea-level, or inhabit the centre of a populous city.

Tommassi-Crudeli, who to the study of malaria, and especially that of Rome, has devoted so much time and ability, in order to explain this strange fact that places near to an infective centre are not affected by the miasma, has had recourse to an ingenious theory, the so-called "*malarial load.*" According to this author, when a strong dose of malaria is concentrated in the air infection takes place, but it does not happen when the

---

\* These extracts are taken from an essay published by Professor Baccelli in 1878, when malaria was prevalent in Rome. [Translator.]

dose is weak. In other words the miasma does not act, when it is very diluted in the air. If the malarial poison was an inorganic chemical one, this theory could not be disputed, but it is not ; it is instead a living germ, which develops and multiplies in the blood, and, therefore, according to the precepts of parasitology, the infection would take place as much with a *weak dose* as with a *strong one*.

In the presence of these difficulties, one can only deduce the following hypothesis : the malarial germ is contained in the soil and in stagnant waters, or in the bodies of certain animals, as insects for example, *but it is not free in the air*.

Without this Rome, which is completely surrounded by an extensive malarial territory, would be constantly infected. The sea breezes during the 24 hours renew more than ten times the air of the city, and before reaching our houses they pass over marshes indisputably known as malarious. If the winds held the germs in suspension, the whole population would be necessarily infected. This, however, does not happen ; there are thousands of persons born and resident in Rome who have arrived at old age without ever having suffered from malaria.

It is, therefore, reasonable to conclude that the germ of malarial fever does not circulate in a free state in the air, and that it does not penetrate into the human organism in this state with the air.

Is water then its vehicle ?

We cannot admit this either, for the following reasons. Of the four sources of drinking water which supply Rome, three come from malarial centres : the Acqua Paola from Lake Bracciano ; the Acqua Felice from the

Pantano property near the village of Colonna ; the Acqua Vergine from the Salone property, in the Agro Lucullano, yet no one has ever been able to accuse these waters of conducting the malarial ferment into Rome.

The subsoil waters, considered to be capable of containing the germs of typhoid, and those of cholera during an epidemic, are not generally accused of the *malarial crime*.

The Acqua Acetosa, flowing over the marshy banks of the Tiber, is daily drunk by hundreds of persons, for the most part sickly, and, therefore, more easily attackable, but not one of these individuals ever gets malarial fever through drinking the Acqua Acetosa.

Besides, it is notorious that a person can, *in the daytime*, live in unhealthy places, and *drink the waters*, without becoming ill.

The same thing can be said of vegetables and fruits ; the best vegetables, which are often eaten uncooked, come from the moist lands of the malarial centres, but they do not cause malaria, nor do the fruits produce it, which in the dangerous autumnal months appear on our tables, coming from the surrounding malarial districts.

Then in what way does the malarial *plasmodium* enter the human organism ?

One hypothesis only is probable.

The germ directly enters the blood by means of an insect, and this insect is a nocturnal one, perhaps the mosquito, which in its larval and nymphal states lives in stagnant waters.

With this hypothesis many facts are explainable, which otherwise would remain, as we have seen, incomprehensible.



Malarial fever usually attacks a person at night, and especially when sleeping in the open air, exactly because the mosquito sucks human blood preferably by night.

The germ is not transported to a great distance, nor to a great height, because the insects which contain it lead a localized life, and are rarely transported by the wind.

Rome, lying in the midst of a malarial territory, has not malaria, because, amongst its many privileges, is that of not harbouring mosquitoes, or, if a few are born here, they live and die within a circle of a few square metres.

How the mosquito takes up from the soil or stagnant waters the malarial germ, in the present state of our knowledge we cannot yet state, but it could easily be deposited in the capillaries of the skin of the human organism, by means of the mosquito's *sucker*, which is formed of various rigid bristles, pointed, and enclosed in a sheath.

This hypothesis has not certainly direct proof in its favour; the bacteriologists have not yet found the *plasmodium malariae* in the sucker nor in the body of the mosquito, but in truth no one has yet diligently sought for it. To the science of the future awaits the confirmation or the destruction of this hypothesis. It at least, in contradistinction to the other theories, explains why there is no malaria in Genzano, Frascati, and Rome, although all the surrounding districts contain a large culture of the *micro-organisms* which produce it.

[The author, when he wrote the above, was evidently not aware of Dr. Manson's mosquito theory, and Surgeon-Major Ross's experiments in connection with it. This theory deals with the liberation of the *plasmodium malariae* from the human body and its life history outside of it, and not with the possibility of the *introduction* into the

human organism of the plasmodium by means of the sucker of the mosquito, as the author would desire. I believe this idea occurred in the first instance to Laveran, the able French physician, who discovered the *plasmodium malarie* in the human red blood corpuscles, and who proved it to be the cause of malarial fevers. Later, Dr. Manson of London independently announced his theory. He thought that the plasmodium might be swallowed by a blood-sucking insect such as the flea, the sandfly, or the mosquito. On account of the geographical distribution of malaria, besides other reasons, he considered it possible that the two latter insects were the most likely liberating agents of the plasmodium.

Surgeon-Major Ross, of the Indian Medical Service, having been much impressed by Manson's theory, has been experimenting in India since the beginning of 1895 on mosquitoes, with the object of testing this theory. He has, it appears, succeeded in discovering the plasmodium in an active state in the stomach of female mosquitoes, and has thus partly confirmed Manson's theory.

It remains, however, for future observations to discover the passage of the plasmodium from the mosquito's stomach into its tissues and cells before the theory is fully proved. Manson's idea is that from the tissues the plasmodium enters some cell and there develops its reproductive spores, as it does in the red corpuscle of man.—  
**TRANSLATOR.]**

#### HOW TO PROTECT ONESELF FROM MALARIA.

After what has been said, it is almost useless to repeat that within the city of Rome there is not the least necessity for using special means to protect oneself from

malaria. The residents know it practically, and lead an ordinary life, without preoccupations of this kind. The coffee shops and the drinking places are frequented up to very late hours ; when the *nottambuli* retire, the early workers leave their houses, but neither the latter nor the former bestow a thought on the air being noxious. Long experience has shown them that even by night, in the city, one does not contract malaria.

A good custom diffused amongst the inhabitants, is that of keeping the bedroom windows shut at night. Not because it protects one from malaria, but because it defends one from rheumatic affections, so easily determined by the lowering of the temperature which occurs in Rome in the summer nights. The nocturnal coolness is a relief, but it is necessary to use it sparingly.

Every other precaution is unnecessary.

For those, however, who inhabit the Roman Campagna, or even the suburbs, it is very different. Here it will be necessary to use proper precautions, otherwise one may readily take the infection.

And the precautions counselled by experience are as follows :

To inhabit dry houses, and, if possible, those raised above the surrounding surface.

To leave the house after sunrise, and to return a little after sunset.

To sleep with closed windows.

To eat healthy and substantial food, and to drink a moderate quantity of good wine with meals.

Instead of the ordinary drinks that one takes in the early morning or after meals, those prepared with cinchona bark should be preferred.

A few grammes of quinine should be kept in the house in case the fever attacks one.

Medical advice should be sought as to the advisability of using arsenious acid as a preventive or a curative agent.

After this, even if one gets a slight infection, there is no occasion to be uneasy about it. Malaria is a disease which is cured with the greatest facility, and should not cause the least apprehension.

How many persons, terrified by the slight malaria of some parts of the Agro Romano, fly to and live in towns where typhoid fever is endemic, or in districts where tuberculosis destroys, unobserved, hundreds of victims? How many inhabitants of the Campagna die of poverty, through not cultivating land on which they could live comfortably, with the little trouble of keeping a box of quinine in the house? Thousands of peasants in other regions of Italy live in sites more infested by malaria than this, and work in the fields all the year, living to the age of eighty years! We bless the fields which give us good crops, even if their cultivation causes us some sacrifices! The life of the fields is much more healthy than that of the dusty offices of cities, the inflexible destroyer of our lungs.

## CHAPTER III.

## THE WATERS OF ROME.

*Ab urbe condita per annos CCCXLI. contenti fuerunt Romani usu aquarum, quas aut ex Tiberi, aut ex puteis, aut ex fontibus hauriebant.*

—SEXTUS GUILIUS FRONTINUS “Commentaries.”

## THE TIBER WATER.

THE water of the Tiber, although it is turbid and muddy in its passage through the city, was considered from ancient times good to drink, and even had the reputation of being the best drinking water in Rome. We repeat, on account of its curiosity, the fact that Gregory XIII. wished only to drink Tiber water; Clement VII. carried it with him in his journey to Marseilles, and Paul III. to Nice, Bologna, and Loretto.

It appears, however, that it was the custom to draw it from the river above the bridges, before it had received the refuse of the city, and it was allowed to deposit for some days in earthen vessels. The physicians of those days, although they agreed with public opinion in admitting the potability of the waters of the Tiber, especially insisted that it should be collected above the city. Cisterns also existed for filtering the water, after which it was sold in the public streets.

With the ideas nowadays dominating in science, it is not possible to accept the verdict of Paul III. and Clement VII. on the goodness of the Tiber waters, but yet it results also to-day from chemical and bacteriological

examinations, recently made by Professor Celli, that they are better than one would at first sight suppose, and are certainly purer than those of the Seine at Paris and the Spree at Berlin. This analysis has shown us that the water of the paternal stream, before entering the city, has a proportionately scarce number of bacteria; these increase in the urban portion, and reach their maximum at Ponte S. Paolo. At Magliana the water is partly purified by the natural oxidation of the organic matters; this natural purification is almost complete at Fuimicino, so that the chemical and bacteriological examinations in this locality give very similar results to those of the Ponte Molle. The pollution of the urban portion evidently results from the discharge of the cloacæ into the river, and the fact is notable that it is almost nothing in the midst of the current, whilst it is very sensible near the banks, because the cloacal currents flow for some considerable distance before intermingling with the central current. At the left bank considerable quantities of ammonia are found, but less quantities at the same level in the centre.

When the sewerage works which will convey the waters of the cloacæ beyond S. Paola are completed, this slight pollution of the river within the city will cease, and the Tiber water will be at the height of its ancient reputation. It must be considered, however, that it will never again have the honour of being carried by Pontiffs on their travels as a precious beverage.

#### THE SUBSOIL WATERS.

The subsoil of the Agro Romano is completely impregnated with waters, which continuously flow in it, producing springs and marshes whose numbers can be counted in thousands. This immense mass of water, which is never



wanting even in the driest seasons, has its natural reservoirs in the craters of the ancient volcanoes transformed into lakes, such as those of Bracciano, Martignano, Albano, Nervi, and from them—which are situated at a considerable height—the water is injected into the underlying campagna with such pressure, that it is not difficult to make it gush out at the surface, by means of suitable borings of the soil.

The city of Rome, situated in the Agro Romano, is subject to this general condition, and although sewered and pierced in all directions by tunnels and underground passages, it contains a quantity of subterranean water, as is shown in the following account given by Tomassi-Crudeli, on some observations made by Professor R. Lanciani :—

THE SPRING WATERS.—(1) *Acqua di S. M. delle Grazie* ; (2) *Acqua Lancisiana* ; (3) *Acqua del' antico Orto Botanico* ; (4) *Acqua Corsiniana* ; (5) *Acqua della mole Gianicolense* ; (6) *Acqua ad fontis Aras* ; (7) *Sorgente di via Margutta* ; (8) *Acqua Petronia o Sallustiana* ; (9) *Acqua di S. Felice* ; (10) *Acqua del Grillo* ; (11) *Lautolae* ; (12) *Tullianum* ; (13) *Fons fortunae* ; (14) *Fons Lupercalis* ; (15) *Piscina publica* ; (16) *Acqua Mercurii* ; (17) *Fons Apollinis* ; (18) *Fons Camenarum* ; (19) *I due Velabri (Acqua Argentina)* ; (20) *Palude Caprea*.

Some of these waters have little importance ; others, instead, have very much, both as to their volume and the zone they feed.

The *Acqua Petronia*, or *Sallustiana*, descends from the *Porta Pia* and the *Villa Ludovisi*, and becomes visible as a very limpid stream in the cellars of the right side of the *Via del Tritone* to the *Angelo Custode*.

The *Acqua del Grillo* visibly runs in a subterranean passage of the *Grillo* palace, and its zone is limited by the *Vie Urbana*, *Panisperna*, *Magnanopoli*, and *Tor di Conti*.

This water has a different composition from that of the Sallustiana.

The Acqua Argentina arises near the Velabro, and exactly in the site where the Cloaca Maxima is visible. This water is reported to cure an infinite number of diseases, and we can well believe that the lower classes go there to drink it as a cure, because there is a person there whose duty it is to sell it. The fact is that the spring is but a few metres distant from the mire encumbering the Cloaca Maxima, from which exhales, especially in the summer, a stench which does not in the least assure the *therapeutic* value of the spring.

The authorities should remedy this nuisance to the advantage of public health and the interests of civic decorum, because this place, on account of its historical importance, is continuously visited by strangers.

A very characteristic zone of subterranean waters is that which descends into the Tiber from the Vatican court-yards, traversing Via di Porta Angelica, and following the line of Borgo S. Angelo.

Outside the Porta Salaria there is a large subterranean current, whose direction is rendered visible by introducing a float into the wells. This current proceeds in the direction of the city, but it does not enter there, as one can prove by comparing the depth of the wells of the Vigna Cancalani and Vigna Renazzi (30 metres) with that of Porta Pia (41 metres), and the chemical composition, which is completely different.

The subsoil waters of Rome were chemically analyzed by Professor Marino-Zuco, and bacteriologically by Professor Celli. The analyses have given the following results :

They are generally very clear and colourless with a few

exceptions, which have a slight yellowish tint, due to the presence of organic matter. Either slight or strong traces of ammonia and nitrites are sometimes met with, which reveal the organic work of micro-organisms.

In effect, the Sallustiana waters contain in every cubic centimetre from 16 (Porta Pia well) to 160 (V. Mola dei fiorentini) colonies of germs capable of liquefying gelatine; the Grillo waters from 6 to 83; the waters of the Trastevere wells from 73 (Porta Angelica) to 450 (Convent of S. Onofrio); the waters of the small spring of Trastevere from 6 (Acqua Pia) to 15 (Lancisiana) and up to 3,366 (Sciarra gardens). The total number of germs which grow in the said waters, liquefying and non-liquefying the culture media, is much greater, exceeding the Sallustiana waters in some cases by 2,000 per cent.

The defilement of these waters is chiefly due to local causes. Thus the impurity of the waters of the Sciarra gardens is due to the cultivation of the land, and the odour of coal gas in the Acqua Argentina is owing to the fact that this water runs in the subsoil between the Aventine and Palatine in proximity to the gas works.

As a rule the impurity of the subterranean waters is least at their point of origin, and greatest at their outfall into the Tiber.

There are, however, exceptions to this rule. The well at 22, Piazza Rusticucci, and that of 22, Via Garibaldi, give purer waters than the wells situated at a greater distance from the river, but the explanations of this circumstance are found in local causes. The Piazza Rusticucci well is situated at only a few metres from the ancient aqueduct of the Acqua Paola, and the Via Garibaldi well is only a little distance from the great fountain of S. Pietro in Montorio.

A like exception is observed in Prince Aldobrandini's palace, whose water is more pure than the neighbouring Grillo waters ; but the water of this well has a great resemblance to the Acqua Felice, and it is probable that it is derived from the Felice aqueduct, which is situated in the same court-yard.

Professor Marino-Zuco, in analogous conditions, suggested a similar explanation for the water of S. Damaso. This, at its origin, is less pure than where it becomes visible in the *loggia* of the Sant' Uffizio palace and in the hidden Pontifical portion. Now, it has been observed, that the dividing pipe is distant only a few metres from the great fountain of the Aquilone, in the Vatican gardens, fed by the Acqua Paola, and the little aqueduct of S. Damaso for a long distance runs parallel to, and even at certain points lies under, the enormous aqueduct of the Acqua Paola.

In all the subsoil waters, as has been already stated, a certain degree of contamination exists, a condition which is easily explained by the vicinity of the aquiferous stratum to the sewers of the city.

The degree of contamination in the greater number of these is within tolerable limits of declaring them potable waters, but fortunately the Roman authorities, who well know the superiority of our aqueduct waters, in 1884 ordered the closure of the urban wells. The waters of these wells are not to be trusted, and, even when they are excellent, they may at any moment become contaminated.

The following fact, referred to by Professor Marino-Zuco, is a clear proof of this. Signor Riganti, the owner of No. 5, Piazza Campo Marzio, affirms that he had always held the water of his well as being excellent in quality,

and until the year 1884 he had no reason to think otherwise. This house is situated near the Piazza delle Coppelle, where the fish market is held. In 1884, on account of the dread of the cholera epidemic, large quantities of carbolic acid were thrown into the sewers of this Piazza for disinfecting purposes. Signor Riganti then began to observe an unusual odour in the water of his well, and finally it acquired a disgusting taste, and a most marked odour of carbolic acid. The well was in very good condition, and jealously guarded ; the only explanation of this contamination of the water with carbolic acid is that there was direct communication between the subsoil waters and those of the sewers.

#### THE WATERS OF THE ANCIENT AQUEDUCTS NO LONGER IN USE.

Sextus Julius Frontinus, curator of waters in the year 848 of Rome (94 A.D.) in the time of Nerva and Trajan, left in his Commentaries exact descriptions concerning the nine ancient aqueducts, which we gladly summarise.

##### AQUA APPIA.

This water was conducted into the city in the year 441 of Rome, Appius Claudius being censor, and Valerius Massimus and P. Decius Mus, consuls.

The aqueduct was 16,444'60 metres long, and took origin in the Agro Lucullano at 1,155'60 metres to the left of the Via Prenestina, between the V. and VI. mile stones. The quality was very good ; its volume in 24 hours was 115,303'50 cubic metres.

Its level was somewhat low. Augustus introduced into the Aqua Appia a branch of that conducted by him, and it, therefore, had the name of *Aqua Augusta*.

## AQUA ANIO VETUS.

This was conducted into the city in the year of Rome 481, M. Curius Dentatus being censor, and Spurius Carvilius and Lucius Papirius, consuls.

The aqueduct was 63,704·50 metres in length, and it had its source from the Anio, six kilometres above Tivoli.

The volume of water in 24 hours was 277,865·60 cubic metres.

At Porta Maggiore it divided into two branches, one of which was afterwards used for supplying the baths of Caracalla.

## AQUA MARCIA.

(See page 55.)

## AQUA TEPULA.

It was conducted into the city in the year of Rome 627, Cneius Servilius Caepio and Lucius Cassius Longinus being censors, and Plauzium Ipseus and M. Fulvius Flaccus, consuls.

The aqueduct was 16,000 metres long, and took origin near Marino, on the right of the Via Latina at the X. milestone, and at the VII. milestone it was placed above that of the Aqua Marcia.

The volume of water in 24 hours was 28,115·10 cubic metres, a part of which was distributed before it entered Rome.

This name was given to the water on account of its temperature.

## AQUA JULIA.

It was conducted into the city in the year of Rome 719, by Marcus Agrippa, Lucius Volcazium and Augustus being consuls.

The aqueduct was 23,853·60 metres in length, and

originated in the Alban mountains, at the foot of Rocca di Papa, two miles to the right of the Via Latina at the XII. milestone, and reached Rome above that of the Tepula and Marcia.

The quality of this water was mediocre, and its volume in 24 hours was 76,195·10 cubic metres.

AQUA VIRGO.

(See page 50.)

AQUA ALSIETINA OD AUGUSTA.

This was conducted into the city in the year of Rome 733 by the Emperor Augustus.

The aqueduct was 32,847·80 metres long, and had its source from Lake Alsietino, or Martignano, near that of Bracciano.

The volume of water in 24 hours was 24,766·60 cubic metres, and its quality was rather bad.

During the reign of Augustus, it was used for the sea-fights and, perhaps, also for the flushing of the sewers and irrigation purposes, but in other times it was used by the people of the Transtiberine region, when the water supply was interrupted, through the repairing of the aqueducts, or other causes.

AQUA CLAUDIA (CAERULEA).

It was conducted into the city under the Emperors Caligula and Claudius in the years 789 and 803 of Rome.

The aqueduct was 68,750·50 metres in length, and its source was about 450 metres to the left of the Via Sublance, near the XXXVIII. milestone.

The sources were two; the one called *caerulea*, the other Curzia, and sometimes the Albudino stream joined it.

The quality of the water was excellent, and its volume



in 24 hours was 291,070·30 cubic metres, a part of which was distributed before it reached Rome.

#### AQUA ANIO (NOVUS).

This was conducted into the city in the years 789 and 803 of Rome, by the Emperors Caligula and Claudius.

The aqueduct was 86,964 metres in length, and it took origin from the river Anio, near the XLII. milestone of the Via Sublacensis. Trajan lengthened the aqueduct to the LXII. milestone, in order to take the waters directly from the lake near Nero's villa, where they were perfectly clear.

The arches of this aqueduct were 32·30 metres high in some parts, and near the locality called Ponte Lupo, they were placed on those of the Aqua Claudia.

The volume of water in 24 hours was 299,346·80 cubic metres.

The aqueducts conveying these waters discharged at diverse levels into tanks, from which, by means of an immense network of canals, and lead or brick tubes, they ramified to all parts of the city.

The waters derived from the Anio, being frequently turbid through the rains, were discharged into large reservoirs.

The waters were classified in the following order according to their purity :—1, Marcia ; 2, Virgo ; 3, Claudia ; 4, Appia ; 5, Julia ; and then the others, preferably used for sea-baths and baths.

In respect to the height of the level, the order was as follows :—1, Anio (Novus) ; 2, Claudia ; 3, Julia ; 4, Tepula ; 5, Marcia ; 6, Anio (vetus) ; 7, Virgo ; 8, Appia ; 9, Alsietina.

Besides these aqueducts, after the epoch in which

Frontinus wrote, others were constructed, concerning which, however, we have not such detailed and certain particulars as those above reported.

Trajan, in the year V. of his empire, conveyed from Lake Sabatino, now Bracciano, a quantity of water which was called Traiana or Sabatina.

Cassius gives the daily volume of this water as amounting to 118,126·80 cubic metres.

In the Epilogue of P. Victor, and in the Chronicles of the Empire, an Aqua Severiana is mentioned, brought into Rome by Septimius Severus for supplying the baths he constructed.

From the same sources it is inferred that Antoninus Caracalla, when he constructed the majestic baths which bear his name, had conveyed to them another water which was called Antoniana, largely making use of the aqueduct of the Aqua Marcia, on which new arches were placed. Lampridius, in the life of this Emperor (Chapter XXX.), mentions that this work was completed by him.

We have more certain particulars concerning the Aqua Alessandrina, which Alexander Severus brought into Rome for his baths. Its sources were in the Pantano property, 14 miles from Rome.

Under the authority of Constantine, the Aqua Algenziana was conducted into Rome; it had its sources at the foot of Mount Algido, from which it took its name, near the XIX. milestone of the Via Latina, where now Rocca Priora is. It is a very pure water, and at present supplies the district of Frascati.

Taking into consideration the quantity of water measured by Frontinus, and of that which one may suppose reached Rome after the epoch in which Frontinus wrote, we can

assert that our city, in the last years of the Empire, received a supply of water corresponding to about 1,800,000 cubic metres, or a milliard and 800 millions of litres every day.

Procopius mentions (Gothic War, book I, c. XV.), that these fourteen waters came to Rome also in the times of Justinian, in the first period of the VI. century of the vulgar era, by means of separate canals, which Vitige, besieging Rome, cut for the purpose of taking away these waters from the city. After that ruin, and the successive devastations due to time and the invasions of the Barbarians, the Romans were constrained anew to use the waters of the Tiber, and the wells, for domestic purposes. A few only of the aqueducts were repaired, where restoration involved the least expense ; thus the Aqua Claudia has been alluded to, in some documents, as still existing in the XII. century under the name of *Lateranense*.

#### THE WATERS OF THE AQUEDUCTS ACTUALLY IN USE BY THE INHABITANTS OF ROME.\*

##### THE ACQUA VERGINE.

The Acqua Vergine was conveyed into the city in the year of Rome 733, by the Emperor Augustus, by means of an aqueduct 20,896·60 metres in length.

The two sources were, as they now are, in the Salone property, where the camps of Lucullus at one time were placed, at the VIII. milestone on the Via Collatina.

These springs were pointed out to the Roman soldiers, who were searching for them, by a young girl. In commemoration of this, a little shrine was constructed there with an allusive picture, and the water was called *Vergine*.

---

\* These waters were analysed in 1884, in the Chemical Institute directed by Senator Professor S. Cannizzaro, by Professors Mauro Nasini and Piccini.

The aqueduct of the Vergine, having been destroyed in the times of the Barbarians, was restored, in 1453, by Pope Nicholas V., who adorned it with a fountain, which, because it discharged in three divisions, was commonly called Acqua di Trevi. The aqueduct, ruined again, was restored by Sixtus IV. After this date, its course was several times interrupted; about the middle of the XVI. century, Paul III. thought of furnishing Rome anew with potable water, and this idea of his, favoured by his successor Pius IV., was completed under the pontificate of Pius V., who, on August 15, 1570, restored the Acqua Vergine to Rome. Benedict XIV., in the year 1744, united to this water another supply, taken from the ancient *rivus herculaneus*, which in quality was not inferior to the Acqua Vergine.

The height of its level is 24 metres above the sea at its source, and 22 metres at its entrance into the city.

Its volume in 24 hours amounts to 80,000 cubic metres. The aqueduct even now is 20·8 kilometres in length, and traversing the Bocca di Leone property, reaches the vicinity of the Ponte Nomentano, and, following the declivity of the hill which lies above the villa of Julius III., arrives in Rome near the Muro Torto, where it feeds two conductors, one for the fountains of the semicircles in the Piazza del Popolo and that of the old Mattatoio (abattoir), the other runs along the Via Flaminia, and distributes water to many suburban properties. Within the city it passes under the public promenade of the Pincio, the Villa Medici, and the Villa S. Sebastiano, and divides into two at the foot of the Trinita dei Monti steps.

At the beginning of the aqueduct in Via S. Sebastiano

a filtering tank was recently erected, in place of that already existing at the bottom of Vicolo del Bottino.

The principal arteries of this aqueduct are two : one runs along the Via del Babuino to the Piazza del Popolo, the other passes through the Via di Propaganda Fide, del Tritone, and Piazza Poli, to the Trevi fountain.

The Acqua Vergine has always had an excellent reputation, not only by the people, but also amongst the specialists.

It contains much free carbonic acid, which not only impedes the deposit of carbonate of lime, but is capable of dissolving it.

The Acqua Vergine is very clear, odourless, and colourless ; it is well aerated, and grateful to the palate ; and has an almost constant temperature of 59° F.

The quantity of carbon or organic nitrogen contained in this water is very small, much under that of waters with great organic purity. In 100,000 parts of water there are 0.033 parts of carbon, and 0.0063 of nitrogen.

The bacteriological examination made with much diligence by Dr. Sanfelice and Dr. Orefice, has demonstrated the presence of various non-pathogenic species of micro-organisms.

Their numbers varied according to the season and the place where the water for analysis was obtained. Not a single pathogenic or disease-producing micro-organism was isolated by them, and, consequently, after this test, one must include it amongst the purest of drinking waters.

#### ACQUA FELICE.

The Acqua Felice was conveyed to Rome by Alexander Severus, for supplying his baths, from the property now called Pantano, near the village of Colonna in the Tus-

culum hills, by means of an aqueduct 33 kilometres in length.

This aqueduct was also destroyed by the Barbarians.

Sixtus V., as soon as he had ascended the Pontifical chair, seconding the project already formed by his predecessor, Gregory XIII., attended to its conduction into Rome, and from his name, Felice Peretti, it has been called *Acqua Felice*.

Its source is 65 metres above the sea-level.

It enters Rome near the Porta Maggiore. The aqueduct, constructed in great part on the ruins of the aqueducts of Marcia and Claudia, is now 35·2 kilometres long, of which about 10 are subterranean, and the remainder on arches which are in some places 16 metres high.

Its volume in 24 hours is 20,500 cubic metres.

The Acqua Felice is nearly always clear, odourless, and colourless; it has a more or less constant temperature of 60·8° F. It may be included amongst those of greatest organic purity.

The relation between the carbon and the nitrogen leads one to conclude that the small amount of organic matter it contains is of vegetable origin.

The nitric acid is in less quantity than that of the Acqua Vergine; the chlorine is a little above the limits of 0·8. The total quantity of dissolved substances is considerable, but inferior to that which is allowable in potable waters. Notwithstanding this, the Acqua Felice is to be classified amongst the rough and hard waters, on account of the high proportion of lime it contains, which makes it much inferior to the Acqua Vergine for domestic and industrial uses. In fact, it readily deposits carbonate of lime, and the lead and iron pipes

that convey it are sometimes completely obstructed by this salt.

There is no doubt that the *Acqua Felice*, although not suspicious, still, on account of the quantity of carbonate of lime it contains, its limpidness, which sometimes is not perfect, and its somewhat elevated temperature, is to be considered inferior to the *Acqua Vergine*.

#### ACQUA PAOLA.

The *Acqua Paola* was conducted into Rome by the desire of Paul V. It takes origin in Lake Bracciano 164 metres above the sea-level. Near Anguillara it unites with the *Acqua Traiana*, coming from springs near Vicarello, 325 metres above the sea-level, formerly conveyed to Rome by the Emperor Trajan, after whom it was called. It reaches Rome on the Janiculum at a height of 71 metres, and becomes visible in the majestic fountain of S. Pietro in Montorio. The total length of the aqueduct is 54 kilometres, that is to say, 24 kilometres from the springs to the lake (Trajan's aqueduct), and 30 from Lake Bracciano to Rome.

Its volume in 24 hours is 50,400 cubic metres.

The *Acqua Paola* is not always clear; observed in a Crook's colorimetric apparatus it presents a very slight colour, so slight, that it is impossible to exactly measure it. It is not very agreeable to the palate; the temperature varies according to the seasons, and in summer it is very warm. It is well aerated, and has a perfectly normal chemical composition, with the exception that the chlorine and the ammonia it contains slightly exceed the limits assigned to a perfectly pure water.

The quantity of organic substances in the *Acqua Paola* are greater than that of the other aqueduct waters



of the city even in winter. Such substances would be tolerable, if they were not much increased in the summer. They are derived from vegetable matter—leaves and grasses which decompose on the surface of Lake Bracciano. With all this it is better than the drinking waters of many other cities.

In order to remove the vegetable contamination of this water, it has been suggested that its intake in Lake Bracciano should be extended more towards the centre of the lake.

It feeds the fountains in the Piazza S. Pietro, turns some mill-wheels, and a good part of it is used for flushing the sewers.

#### ACQUA MARCIA.

The Acqua Marcia was conveyed into the city by Quintus Marcius Rex, prætor, in the year 608 of Rome.

The aqueduct was 91,424·10 metres in length, and its source 38 miles from Rome, 3 miles to the right of Via Valeria.

The quantity of water was 296,314·20 cubic metres in 24 hours, a part of which was distributed before it entered the city. Its quality was always considered to be excellent.

The aqueduct having been destroyed by the Barbarians, the Acqua Marcia was not re-introduced into the city until 1870, through a concession made by Pius IX. to a society of capitalists; for this reason the water is also called *Pia*.

The new aqueduct begins in the valley of the Anio near Marano, from some springs called *Serene*, situated 324 metres above the level of the sea. It is 53 kilometres in length; its first half is in masonry with a sectional area capable of conveying 200,000 cubic metres a day, and it

descends along the right side of the valley to a place called Varo, a little below Tivoli. There, at 184 metres above the sea-level, it enters cast-iron pipes, 26,500 metres long, which come underground direct to Rome through the Porta Pia.

Its volume in 24 hours is 108,000 cubic metres.

The Acqua Marcia is very clear, colourless, and odourless, well aerated, and very cool. It has a more or less constant temperature throughout the year, of  $48\cdot2^{\circ}$  F. at its sources, and  $51\cdot8^{\circ}$  F. in Rome. It has the composition of a good potable water obtained from calcareous districts; the carbonate of lime it contains is weakly dissolved, and it deposits with the greatest facility, and, although it is brought to Rome in full pipes, it forms deposits in the aqueduct, and reaches the city with a fixed residuum less than that at its sources.

The facility with which the carbonate of lime separates generates in many persons the prejudice that the Acqua Marcia can produce concretions in the human organism; it, however, has now been demonstrated that this danger does not exist, and all the most able medical authorities maintain, to-day, that a quantity of lime which does not exceed a certain limit, far from being injurious, specially aids the formation of bone tissue.

As to organic matters, the Acqua Marcia can be said to be very pure, because it contains only barely sensible traces of them; the nitrates are under the assigned limits, as all good waters which come from calcareous or dolomitic districts should be; it does not contain traces of ammonia or nitrites.

The small quantities of sulphuric acid are due to the rocks, as they certainly cannot indicate remote contamina-

tion, the organic matter and its products of decomposition not being found together.

On account of its physical properties, its chemical composition, and origin, there is no doubt that the Acqua Marcia deserves to be included among the very best.

The bacteriological examination made by Dr. Sanfelice and Dr. Orefice in 1890, has demonstrated the presence of several species of non-pathogenic micro organisms in this water.

Their number is inferior to that of the Acqua Vergine ; it increases with the augmentation of temperature, and in the water taken from the house pipes it is greater than that taken directly from the street pipes.

The species of micro-organisms found were all harmless, and *pathogenic* species were never found, although specially sought for.

The Acqua Marcia, as in ancient times, is now the best in Rome, and it is one of the best, if not the best, in any European metropolis.

# CHEMICAL COMPOSITION OF THE WATER SUPPLY OF ROME.

	Acqua Vergine.	Acqua Felice.	Acqua Paola.	Acqua Marcia.
Solid residue in 100,000 parts, at 100° Cent. ....	37·24	44·80	29·00	29·64
Solid residue in 100,000 parts, at 180° Cent. ....	36·92	43·84	27·80	28·60
Total hardness in French degrees...	18·33	29·36	11·8	27·52
Permanent hardness in French degrees.....	2·60	2·47	2·86	6·57
Temporary hardness in French degrees.....	15·73	26·89	8·94	20·95
Dissolved oxygen in 1 litre .....	5 c.c.	18 c.c.	7 c.c.	7 c.c.
Dissolved nitrogen in 1 litre .....	16 c.c.	12 c.c.	14 c.c.	14 c.c.
Total C O <sup>2</sup> .....	24·53	31·52	14·38	25·35
In 100,000 parts of water.				
Sodium chloride .....	2·114	1·649	6·146	0·643
Sodium carbonate.....	4·318	2·535	2·961	0·186
Potassium nitrate .....	1·547	1·153	0·436	0·429
Potassium carbonate.....	4·586	3·337	4·223	—
Calcium sulphate .....	2·890	3·461	3·552	0·449
Calcium nitrate .....	—	—	—	0·074
Calcium carbonate .....	13·090	21·955	4·371	19·170
Magnesium carbonate .....	3·920	5·817	3·898	6·888
Silica .....	4·360	4·360	1·625	0·680
Total inorganic solids .....	36·825	44·267	27·212	28·619

The daily water supply is approximately as follows :—

Acqua Vergine	...	...	80,000 cubic metres
Acqua Felice...	...	...	20,500 „ „
Acqua Paola...	...	...	80,000 „ „
Acqua Marcia	...	...	108,000 „ „

Total .. .. 288,500 cubic metres.

## MINERAL WATERS.

## ACQUA ACETOSA.

It arises at the foot of the Monti Parioli, almost on the banks of the Tiber. It is about three kilometres from Rome, and one reaches there from the Porta del Popolo, through the Via Flaminia, and from the Ponta Pia, through the new Viale dei Parioli.

The water is very clear, with an acidulous taste, and a temperature of about  $60\cdot8^{\circ}$  F. in summer ; it is slightly effervescent, and discharges with three jets into a stone fountain, constructed in 1661 by Bernini, by the order of Alexander VII.

It was recently examined by Dr. Feliciani, who found that it contained much chloride of lithium, and that it could advantageously substitute many foreign mineral waters.

The middle jet is preferred, because it is more acid.

The fountain is not much frequented, perhaps it will be more so when the new Passeggiata Flaminia, with its plantations and roads systematised, offers a less dusty and more shady walk.

It is commonly used, without medical advice, in slight gastric and urinary affections. It would be beneficial in chlorosis and slight cases of anæmia, if it were taken in the early morning on the spot—after a good walk.

## ACQUA SANTA.

The Acqua Santa is situated in the valley of the Ninfa Egeria. One reaches it from the Porta S. Giovanni in a walk of about three-quarters of an hour. It has a tem-

perature of about  $57^{\circ}$  F. ; it is clear, with an acidulous taste, and is slightly effervescent.

This water was known in ancient times, when it was more esteemed than it is to-day. It is mentioned by the physician Petroni, in a work of his published in 1575, and in 1688 Pope Alexander VII., having been cured by it, had a tablet placed in the spot where it discharges. Morichini considered it to be preferable to the *Acqua Acetosa*, and advised its use in gastric and urinary affections.

#### ACQUE ALBULE.

This is a spring of sulphurous water distant about 20 kilometres from Rome, and one can get there by means of the railway, and the steam-tram, which go to Tivoli.

The water is clear, limpid, and when seen in mass it has a milky appearance, hence its name. It contains much sulphurous acid, sulphurated lime, and bicarbonate of lime. At a little distance from the place where this spring arises, an establishment has been built, arranged in such a way as to make full use of the curative properties of these waters, and to remove the bad impression of the natural sterility of the place. The baths include large swimming baths, which are much frequented by the Romans in the summer months. It has a constant temperature of about  $75^{\circ}$  F.

The *Acque Albule* are specially useful in skin diseases, but they may also be used with advantage in some diseases of the mucous membranes, and for rheumatic affections.

#### THE ROMAN SWIMMING CLUB.

This club was formed by those citizens who were desirous of extending the exercise of swimming, so useful

for invigorating the muscles, and preventing deaths by drowning.

It has an establishment situated in the locality called *I Polverini* on the banks of the Tiber. All the members have the right to learn swimming, which is taught them by competent masters.

President : Professor Postempski.

#### BATHS.

There are some modest but clean bathing establishments in Rome, provided with marble baths, with douche services, medicated baths, and hydro-electric treatments,

Stabilimento Alibert—Vicolo Alibert, 1 A ; Stabilimento Bernini—Via Belsiana, 64 ; Stabilimento al Babuino, 96 ; Stabilimento ai Crociferi, 44 ; Stabilimento in Via Venezia, 9 A ; Stabilimento in Via Volturno, 37.

No public baths exist in Rome, as they do in the principal Italian and foreign cities. Some years ago an attempt was made to establish public baths in the city, but it was unsuccessful.

#### THE PUBLIC FOUNTAINS OF ROME.

The fountains of Rome are the richest in the world, because the waters in nearly all of them are perennially discharged, whilst those of Paris, and other large cities, are suspended during the night, or are discharged only on special occasions. They are as follows :

##### ACQUE VERGINE.

Fontana di Trevi discharges 200 litres per second ; Fontana di Piazza di Spagna discharges 8.25 litres per second ; Fontana Centrale di P. Navona discharges 35 litres per second ; Fontana Centrale di P. del Popolo discharges 10.5 litres per second.



## ACQUA PAOLA.

Fontana di S. Pietro in Montorio discharges 350 litres per second ; Fontana di Piazza S. Pietro, each discharges 75 litres per second.

## ACQUA FELICE.

Fontana del Mosè discharges 68 litres per second ; Fontana del Quirinale discharges 32 litres per second ; Fontana di Campidoglio discharges 30 litres per second ; Fontana di Marforio discharges 8·75 litres per second ; Fontana di Aracoeli discharges 1·75 litres per second ; Fontana delle Tartarughe discharges 1 litre per second.

The waters of these fountains are not wasted, as they are used for flushing the sewers, and also for watering the streets, and for private purposes.

## CHAPTER IV.

## THE SEWERAGE OF ROME.

THE valley of the Tiber consists of masses of marl and clay with frequent stratifications of volcanic tufa, which is sometimes found in a compact state (lithoidal tufa), at others in a granular, and it then constitutes the so-called *pozzolana*.

The bottom of this valley is formed of alluvial strata from the detritus of all the surrounding mountains, both calcareous and volcanic.

At a little depth from the surface of the soil, a very abundant sheet of water runs above an impermeable stratum, nearly always consisting of clay.

On this so-formed ground the city of Rome was built, and upon it a population of many millions of individuals have followed one another in the course of centuries.

The conditions of this soil were favourable to contamination: its permeability permitted human refuse to accumulate, when present, in the superficial strata of the earth, and moisture and heat admirably aided decomposition. And as this process always takes place by the intervention of micro-organisms of various species, it is easy to imagine, even without direct proof, the immense work of invisible life that was developed under our habitations.

Through the happy disposition of nature, a numerous series of organisms growing in the soil are not only in themselves innocuous, but render elements innocuous which left to themselves would be pernicious.

Other species of these microscopic germs are dangerous,

and if they penetrate into the tissues of the human organism they generate perturbations, which we call *diseases*. If this noxious influence contemporaneously acts on a considerable number of persons living in a circumscribed place, it determines that morbid state of society which we usually call an *epidemic*.

Thus, if a portion of land inhabited by human beings is abandoned to itself, in a short time it becomes so polluted that it is uninhabitable. This condition of things, on the other hand, does not take place when man intervenes with those provisions which experience has shown to be capable of diminishing, or totally removing, the effects of the contamination of the soil.

One of these provisions is the supply of good potable water, which, as far as regards Rome, we have already dealt with.

Now we proceed to examine another provision also of essential importance, that is to say, the *sewerage*.

By the word sewerage we mean the canalisation of the soil, which serves to remove from houses the greatest part possible of the refuses of life, and conveys the aqueduct waters that exceed our necessities, or which fall in the form of rain or snow. Enlarging this definition still more, we include also in it that series of hydraulic works used for draining the soil of its subterranean waters, and which is also called *drainage*.

Desiring to speak even in a summary way of the sewerage of Rome, we must take ourselves back to the early centuries of its foundation, because even in those times truly magnificent works were constructed. After twenty-five centuries, some of these works still exist, and are in use, imperishable monuments of power and civilization.

The first colossal work was constructed by Tarquinius Priscus, and was a bridge-canal for conveying the waters over the valley between the Palatine and the Capitoline hills.

Tarquinius the Proud, wishing to provide for the discharge of the waters from the Quirinal, Viminal, and Esquiline hills, newly added to the city, constructed large collectors for the purpose of conveying the waters towards the Tiber, into which they emptied through the famous *Cloaca Maxima*.

Agrippa, according to what Pliny tells us, constructed a cloaca within which he was able to pass in a boat to the Tiber. This cloaca possibly followed the course of the present Giuditta sewer, which passes from the Pantheon and discharges below the Ponte Garibaldi.

We have already seen that in the times of Furius Camillus, the discharge of the private drains into the public cloacæ was permitted, establishing from that time the maxim that the refuses of animal life should be taken away in canals by the deflux of the aqueduct and the rain waters.

This principle has ever since dominated in the successive developments of the sewerage of Rome, and when in 1884 a technical commission was appointed, composed of the most competent persons in our days, it expressed the opinion that the system of *tout à l'égout*, or the continuous circulation, as it is also called, should be retained, because it responds well to the hygienic requirements of the city.

The same commission added that, "as we now have in certain zones a scarcity of water for flushing the sewers, it would be better to use the modern Waring system there, with tubular sewers, for the independent convey

ance of the sewage of the houses, and their discharge into the central sewers supplied with a greater quantity of water." This system, suitably supplied with automatic flushing tanks, provides an efficacious passage for animal refuse.

Even under the Emperors the sewers were held in much consideration ; thus we find it recorded that in the times of Hadrian and Antoninus, the engineers who looked after the sewers, that is to say, the *curatores cloacarum*, were objects of special attention.

But the flourishing period of Roman civilization having ceased, the sewers were also abandoned ; however, owing to their solid construction and subterranean position, they underwent less injuries than the visible monuments.

They ended, nevertheless, in yielding to the general ruin, and gradually becoming obstructed, they ceased to act. Then pestilences came to remind the authorities of the city that the circulation of contaminated waters in the soil should be held in as much, and even more, consideration as the circulation of the citizens in the streets, and as a consequence of this, we find the great sewerage works ordered and executed towards the year 1650. by Urban VIII.

The Pontiffs who governed the city after Urban executed new works here and there, and repaired the old, so that the state of the underground circulation from that period has been continuously improved.

Thus we reach the epoch posterior to 1870, in which Rome underwent its greatest edilic transformation, and *pari passu* went the systemization of the urban portion of the Tiber, and that of the sewerage.

The river is being enclosed between two immense em-

bankments, and a regulating plan was adopted for the sewerage, with the view of obtaining the ready removal of refuse liquids of all kinds, without contaminating the Tiber within the city.

For this purpose the construction of two riparian collectors was established, one on the right bank, and the other on the left of the river, which follow the course of the embankments, receiving the contents of the urban sewers.

The left collector is the most important, because it receives the greater part of the sewerage of the city. It has a diameter of 3·95 metres by 4·55 metres, and opens into the Tiber at Mezzo Cammino, 9,993 metres below the walls of S. Paolo; so that, even in the highest fulness of the river, there will be no possibility of the sewerage regurgitating into the house drains.

These works are being made by the State, and in a short time will be completed.

The sewerage of the high quarters of the city begins with the main sewer of the Esquiline, which, following the Via Labicana, unites near the Colosseum with the left *high collector*. This is a main sewer about a kilometre in length, and with a diameter of 2·50 metres by 2 metres which, after running along the Via S. Gregorio and the Via dei Cerchi, discharges into the left riparian collector, in a large work of masonry near the Bocca della Verità.

This masonry work, not yet completed, is the principal junction of the new sewerage of Rome, and can be favourably compared with the greatest of the ancient works, the *Cloaca Maxima*, with which it is almost in contact.

When the works are completed, the new collectors will

receive the contents of all the main sewers of Rome, each one of which collects the sewage of a special tributary service. The principal of these are the following :

#### THE PINCIAN SEWER.

This conveys the sewage of the Pincio, Piazza del Popolo, and adjacent streets.

#### THE S. GIACOMO SEWER.

It begins in the Corso, opposite the S. Giacomo Hospital, and on its short way to the Tiber receives other important sewers.

#### THE SCHIAVONIA MAIN SEWER.

Thus called from the church of S. Girolamo degli Schiavoni, conveys the sewage of that part of the city included between the Piazza di Spagna, Via Babuino, Corso, Via della Croce, Tribuna di S. Carlo.

#### THE TREVI MAIN SEWER.

It receives the sewage of the Tritone, Villa Ludovisi, S. Giuseppe Capo le Case, *Barcaccia*, Piazza di Spagna, Via Condotti, S. Lorenzo in Lucina, Fontanella Borghese, Leoncino.

#### THE CANCELLO SEWER.

This collects the sewage of Via della Scrofa, Baullari, Circo Agonale, Campo dei Fiori, Piazza Farnese, Via Monserrato, Via del Cancellò.

#### THE ORSO SEWER.

It serves the street of this name and those adjacent.

#### THE PANICO SEWER.

It serves the Via del Panico, Piazzetta del Curato, near the Ponte S. Angelo.

#### THE CEFALO SEWER.

It passes along the Vicolo Cefalo, and serves principally



for the sewage of the Via Giulia, whose numerous palaces are very abundantly supplied with Acqua Paola.

#### THE SANTA LUCIA SEWER.

This was constructed for the New Prisons, but it also conveys the sewage of Governo Vecchio, Via Monserrato, and Banchi Vecchi. It also serves for the sewage of the Corso Vittorio Emanuele, to which, however, a special sewer has been allotted, which begins at the Chiesa Nuova, and, beyond the Via Larga, discharges into the left riparian collector.

#### THE MASCHERONE SEWER.

This serves the Campo dei Fiori, Via della Corda, Piazza Farnese, receiving the waters of the two large African granite basins, which formerly ornamented the baths of Caracalla.

#### THE GIUDITTA SEWER.

It begins near San Carlo al Corso, and runs through the latter, Piazza Sciarra, Piazza di Pietra, Piazza del Pantheon, Torre Argentina, Via Arenula to the Tiber or the riparian collector.

#### THE OLMO MAIN SEWER.

It serves for the sewage of San Nicola a Cesarini, Piazza Paganica, Piazza Mattei (Circo Flaminio).

#### CLOACA MASSIMA.

It was constructed by Tarquin to collect the sewage of the Quirinal, Viminal, and Esquiline, and it still performs its office, suitably connected with the large collectors of recent construction.

#### THE BORGO MAIN SEWER.

It receives the sewage of Piazza San Pietro, Borgo Sant Angelo, Piazza Pia, up to the hospital of Santo Spirito.

## THE PRATI DI CASTELLO MAIN SEWER.

In the Prati di Castello quarter, the sewerage has a development of 16,000 metres, divided into two portions, which discharge into a central collector, that opens into the low collector on the right bank of the Tiber. Besides these, there is a brick sewer of a circular form with a diameter of 3·80 metres, and 1,400 metres in length, which passes through the most distant alleys of the quarter, and independently conveys, to the Tiber, the waters of the two ditches of the Valle dell' Inferno, and of the Valle Balduina.

## THE SEWERAGE OF TRASTEVERE.

The ancient sewerage in this district, constructed without a proper system, is, consequently, very defective; it will be done away with when the grand collector is finished along the Viale del Re.

A considerable portion of the new quarters beyond the Aurelian walls, outside the Porte di San Lorenzo, Pia, and Salaria, are so situated that it is very difficult to obtain an outfall for their sewage into the left riparian collector.

For these quarters, a new plan of sewerage has been projected, which would convey the sewage into the Teverone, before it falls into the Tiber at the head of the city.

This project, at first sight, would appear as if it would do away with the general concept of discharging the sewage into the Tiber a considerable way below the city walls.

The new plan, however, does not present any danger to the public health, because it has been proved by Celli's studies, which we have already mentioned, on the waters of the Tiber, that after a certain distance in the river, even

contaminated waters, through the natural process of oxidation, become purified. Besides, the purification of the sewage by means of irrigation forms a part of the new scheme.

The completion of this new network of sewers is dependent on the systemization of the quarters which have so severely suffered through the building crisis.

The water system of sewerage is in every way the best, but it requires an essential condition—that is to say, an abundant supply of water for flushing the sewers.

Notwithstanding that Rome is so rich in aqueduct waters, still the Commune have not a sufficient amount to thoroughly flush the sewers, so that they are now considering the best method of utilising for this purpose a considerable quantity of the *Acqua Paola*; and the engineer, Vescovali, has left a plan for the deviation of the waters of the *Anio*, which, besides being employed for industrial and agricultural purposes, could also be employed with profit to civic hygiene.

Meanwhile, for the flushing of the sewers, in addition to the waters which flow from the architectural fountains of the city, many flushing tanks are used, including the following: that in the *Piazzale di Termini*, near *Via Volturmo*, with a capacity of 1,000 cubic metres, perennially supplied with 320 ounces of *Acqua Marcia*\*; that under the fountain in *Piazza Termini*, of about 800 cubic metres; that of the *Porta Maggiore*, the *Prati di Castello*, etc.

From the particulars which we have briefly given, the

\* An ounce of *Acqua Marcia*, *Felice*, and *Paola* is equal to 14·04 litres per minute, and an ounce of *Acqua di Trevi* equals 28·00 litres per minute.

reader can form a general idea of the conditions of the soil on which the city is built. The importance of the *ancient* and modern works erected for the purpose of preventing the possibility of the contamination of the soil by sewage matters, and thus becoming the source of diseases, will not have escaped his attention.

To these magnificent works the healthiness of Rome is largely due ; when the network of sewers is completed, the conditions of public health will be still more improved, and we well may be proud of a monument of engineering of which few, even amongst the educated classes, hardly suspect the existence.

## CHAPTER V.

## THE CONDITIONS OF HABITABILITY

## ROME AS A SUMMER RESIDENCE.

“ DURING the summer months, *Rome is depopulated* ” ; “ *In Rome one dies of heat* ” ; “ *Rome is a tomb.* ” These are the expressions consecrated by use, that one hears repeated in families, in public resorts, and, above all, in the drawing-rooms of the ladies.

The subject is so important, that it requires examination.

A large proportion of the well-to-do inhabitants, in the summer abandon the city and go into the *campagna*. It is a general custom, which is followed in Italy as it is elsewhere ; at Rome as well as in Milan, at Berlin as in New York. The custom has its existence in the fact, that during the summer heat, one enjoys a little coolness in the *campagna* ; there the ventilation is not intercepted by high buildings ; the houses, mostly isolated, do not reciprocally heat one another with radiating caloric ; the shade of the trees permits one to remain in the open air, even in the hottest hours ; the children are not restrained between the four walls of an apartment ; the social duties of the ladies have ceased for the time being, the men suspend or limit their occupations and affairs ; clothing becomes reduced to the greatest simplicity ; all these are a complex of circumstances, which gave birth to the delightful custom of the summer *villeggiatura*, in the most remote times, and is now, and always will be, maintained, as long as the necessity

for a corrective to the too artificial habitudes of social life shall endure.

And it is very natural that the inhabitants of Rome should also adopt the usages of the other Italians, and in the summer season go to breathe the free air of the fields.

But is this summer *depopulation* of the capital absolutely true?

It is not true to the extent that is generally believed, but in reality, in Rome, the summer absence of the citizens is a little more observable than elsewhere. The causes of this are multiple, but they have nothing to do with the supposed injurious properties of the climate.

First of all, there resides here during the winter, the numerous class of strangers, who come to pass several months either for pleasure, or for motives of health. Their houses are for the most part the grand hotels and pensions, establishments many of which of necessity remain closed when their welcomed guests return to their homes. In contrast with this category of the fluctuating population there is another, that of the proletariat, who descend from the surrounding mountains, in search of work, and return when the spring newly requires their labour in the fields. This class is more numerous than elsewhere, because Rome is the only largely populated centre of the region, and all flock to it from a very extensive territory. Besides, the embryonal state of agriculture does not keep in the *campagna* even those few, who in other places, in small industries, and the raising of cattle, find winter employment.

To these factors we add others all special to our city.

Since 1870, Rome has redoubled its population: there

are about two hundred thousand persons, who, from various provinces of Italy, have come to establish themselves in the capital ; many of them, through necessity, have left their moral and material interests elsewhere, by which they are periodically called away. And it is very natural that they prefer the summer season for arranging their affairs. There are senators and deputies almost all appertaining to the provinces ; an army of 10,000 soldiers, who, in the summer, manœuvre in the camps, and a very considerable number of religious institutions, who send their students to their country residences.

Add to this the fact that the greater number of the *villeggiature* for the inhabitants of Rome, on account of the abandoned condition of the surrounding *campagna*, are so far away, they prevent frequent visits to the city.

With all this, one has causes enough for the diminution of the inhabitants during the summer, without having recourse to the little story of malaria.

There is a not unappreciable contingent of *villeggianti* who make a pretext of *the bad air* for adding the expenses of the *villeggiatura* to their modest domestic balance ; but in these cases such an expense is a sacrifice made on the altar of fashion and vanity, much more than on that of the Goddess Hygeia.

The custom of going out of Rome is prevalent, and one must do it at any cost ; one may economize on the cubature of the air one breathes in one's own apartment, during the year ; one may make economies in the kitchen, sometimes even on the washing, but one, at least, cannot do without the *villeggiatura* ! Very well, frequently in families it is made a question of decorum. The pretext is always health ; that of the children especially.



Now, follow for a little those families who thus think ; let us follow them into their *villeggiatura*.

This class of persons, for the most part, frequents the seaside resorts. Sometimes we find them huddled together in a cottage of poor people, who have retired to live in two tiny rooms, to give the best part of the cottage to the new tenants. In this lodging there are no conveniences ; insufficient air, relative cleanliness ; drinking water from a well or cistern, a primitive latrine. At other times when the family can spend more, they take on the sea shore or upon a hill, a furnished apartment or a little villa, which apparently has all the requirements of a healthy and comfortable habitation. The father and mother are delighted to find that the fresh and healthy air of the country tempers the summer heat ; the children amuse themselves by chasing one another in the neighbouring field, and very quickly their cheeks begin to brown. But that house, for a long series of years, has been let as a furnished summer residence, and that room where the children sleep, had two years before received a consumptive, who went there with the hope of cure. He did not die there, but he left the germs of the disease on the floor, the furniture, the woollen coverlet ; these germs had not lost their virulence, and the poor children, who went into the country for their health, inhale them with full inspirations. Will it always be thus with them ?

Frankly, the *villeggiatura* in these conditions is an aberration, and it is a thousand times preferable to take a comfortable apartment in Rome, and send the children every morning to breathe the fresh air under the delicious shade of the Pincio.

But taking into consideration all the categories of summer emigrants, do you believe that the depopulation of the city is excessive?

No, even this is a prejudice which wants rectifying.

The proportion between those who remain in the city and those who leave for the summer months cannot be stated with exactness, but we can indirectly assume it. And a study made with this intent demonstrated that the summer absence did not reach the numbers commonly supposed. A single fact proves this ; at the Mattatoio they kill more head of cattle in the summer than in the winter months. It is true that in the winter other meats, more particularly pork, are also eaten, but it is equally true that a good part of the pork is cured in the winter and eaten in the summer.

With this fact one certainly does not wish to demonstrate that the population of Rome increases in the summer, but taking into consideration this and many other factors, one can conclude that the summer absence does not justify the use of the word *depopulated*, which is heard from the lips of all in the months of July and August.

It is a different matter when one speaks of the quality of the summer emigrants. On this point the shopkeepers of all kinds can say something ; their business stagnates, because the wealthy classes, in large part, have left, but this is common to all cities, as we have already mentioned.

It results, then, that the *air* does not in the least drive its inhabitants away from Rome in the summer season. Still more, we believe the conditions of the city are such that the day will come in which the proportion of summer emigrants will be reduced to less than the normal average.

We now proceed to give our reasons.

In the first place, the heat is not so trying as many persons imagine.

Here are the mean summer temperatures—June, July, August—for the largest Italian cities during 20 years.

Rome, 73°94' Fahr. ; Turin, 71°78' ; Milan, 73°4' ; Venice, 73°4' ; Florence, 73°85' ; Naples, 73°76'.

Then we have here a slightly higher temperature than in the other places. But we have a compensation, which we have already mentioned in speaking of the meteorology, that is, the double breeze which blows during the whole summer, that from the sea in the afternoon, and the land breeze in the evening ; a very marked breeze which other Continental cities envy us. We are only 20 kilometres in a direct line from the sea, and we enjoy the advantages of a marine climate without the dust and aridity of the coast.

But besides the moderate heat there is another factor which, for a very long series of years, will keep a good part of the middle classes in the city ; we mean the state of the campagna. We have already stated more than once that there is no malaria in the city, but it is right to know that the greater part of the campagna around Rome is malarious. There are several localities where the malaria is not serious ; the peasants can live there for the cultivation of the crops, as they do in almost all the other Italian provinces, which have their proportion of malaria ; but the proprietor of the land, who can choose between a healthy air like Rome, and an unhealthy one, will prefer to pay daily journeys to his property, and return to sleep in the city. Through such climatic conditions, until its campagna is broken up and cultivated, Rome will receive within its walls a good part of

the proprietors, who, in other places, go to oversee the summer agricultural operations.

Such conditions of climate, which compel, so to speak, a summer residence in the city on a great part of the population, should be an incentive for endeavouring to attenuate by artificial means the effects of that heat which, although not excessive, still can be troublesome.

**But this in reality has not been done.** •

Nature has not been a stepmother to Rome, but the modern population has done very little to create those means which serve so well for protecting one in the dog-days, which God sends on earth to ripen the crops and not to roast men.

The trees rapidly grow in this fertile ground, but there is a scarcity of them; some villa at the gates of the city shows a flourishing vegetation, but a few passes beyond there is nothing but dusty roads stricken by the sun, and a deserted, arid, gloomy *campagna*.

It is true that within the last few years, through the work of wise administrators, some gardens have been made in the city, grateful and healthy resorts for our children, but they are still few, and all the lower part of the city does not possess any. Some of these gardens lately made are closed to the public. This is bad; with a small expense for the custodian, and for a few inexpensive seats, the city would be enriched with other places of recreation for children, who now pass too many hours shut up in their rooms and schools. We name some of them to him who governs public affairs: the small garden around Mamiani's monument; the small garden in the Piazza delle Terme, near the Grand Hotel, and those at the beginning of the Via Volturno.

These last being a trust of the Minister of Finance, there is not sufficient reason why the inhabitants should not make use of them. Public health is the chief interest of the State, as it is the chief interest of the municipality.

Some public gardens have also been designed in the periphery of the inhabited district, where shady planes rapidly grow.

These promenades, especially that of the Parioli, would now be much frequented if the communal administration, owing to economical reasons, had not left them in a desolate condition.

The abundance of water, of which our city is justly proud, would make one suppose that there were swimming and public baths in every quarter of Rome in which men of study could invigorate their muscles, and the workman cleanse his skin, blackened by the dust of his trade. But, instead, it is grievous to confess, that in the city of Europe most rich in water, there is not a single swimming bath. A half-dozen small private establishments, and a few bath-rooms in the hotels and private houses : for swimmers the yellow Tiber.

And we live in the city of the Diocletian baths, where 3,600 persons could bathe at the same time, and of the baths of Caracalla, where there were places for 1,600 bathers.

According to Lanciani, in the time of the Cæsars, Rome had in action eleven greater baths, and 926 minor ones, intrusted to private industry, and in that time 62,800 citizens were able to disport themselves contemporaneously in the benign baths, without taking into consideration the yellow Tiber, which ran also then, or the

private baths with which every respectable house was furnished.

No other city in the world, either ancient or modern, can boast of such richness—in the past.

Even the buildings which always are conformed to meteorological vicissitudes—here, in the middle ages, and in modern times, have not been built for the requirements of the climate. The streets of the mediæval city are tortuous and narrow, so that the houses serve as accumulators of heat, with faithful and constant reciprocity; the palaces of the modern city are very high, and the inhabitants are as thick as bees in a hive. The *porticoed* way, which protects so well from the sun and rain, is almost unknown; not even excepting the most frequented central streets, where it would serve to increase the air disposable for transit, without diminishing that of the habitations.

Our forefathers did certainly not think thus, who, for satisfying the conveniences of life, have been masters of all. The Foro Romano, the Foro Traiano, that of Augustus, are there with their majestic ruins to tell us, that the Romans out of doors, when they had to attend to their business affairs, wished to be sheltered from the rain and the heat of the sun.

A project for covering with an arcade a good part of the Piazza Colonna has been recently approved of, and we hope to see it a completed fact.

#### ROME AS A WINTER RESIDENCE.

Its fame is already so wide spread, that it will be sufficient to say only a few words on this subject. Foreigners as well as the Italians from the other provinces,

come to Rome in tens of thousands to pass the winter, attracted by the mildness of its climate. The cold here is always moderate, and in the heart of winter, when the earth in other parts is covered with snow, Rome appears to be in the full autumnal season.

The following is the average winter temperature December, January, February—observed for 20 years in the principal cities :—

Rome, 45·32 Fahr. : Turin, 34·88° ; Milan, 35·78° ; Venice, 38·48° ; Florence, 42·8° ; Naples, 47·66°.

Very frequently the sky is clear and the sun gilds with its rays our habitations, and makes our gardens fruitful, so that orange trees and camellias flourish in the open air, as on the tepid shores of the Tyrrhenian sea.

Many persons suffering from diseases of the chest, at the fall of the autumn, fly from the cold of their habitual residence, and come to this Rome which offers the advantages of the climate of the Riviera, associated with the distractions of a large city. Here they have the advantage of the most perfect means of cure, which can only be found in a great centre, the seat of a medical school, deservedly famous for its scientific teaching.

We have many persons in Rome, who, for more than twenty years, habitually come to pass the winter, because they have re-acquired their health here. Amongst these are some of the foreign physicians in weakly health, who, after unsuccessfully trying other European health resorts, have remained here because they find it preferable to all.

Very many persons, who, on account of their occupa-



tions, have resided for many years in the capital, having arrived at the age of cessation of service, here fix their residence, because, accustomed to the mildness of this climate, they cannot without injury pass their old age in less temperate regions.

In Rome, however, as elsewhere, days of bad weather are not wanting in the winter, in which one longs for an efficacious means of improving it. The art and industry of man should provide for this ; but to be sincere, we must say that man in this sense has done very little ; rather, profiting by the favourable conditions conceded by Nature, it has been abandoned to a deplorable neglectfulness.

Along the streets one catches all the rain that falls from the sky, added to that which drips from the cornices of the houses. Stoves and fireplaces are found but in a comparatively limited number of rooms ; a few years ago a little snow fell in an exceptional way, and the traffic was interrupted for a few hours until the snow had melted.

But these are inconveniences that the good-will of the inhabitants will quickly put an end to, whilst no contrary vicissitudes can take away from the eternal city the smile of its splendid sun.

#### DENSITY OF THE POPULATION—INSUFFICIENCY OF BUILDINGS.

After 1870, in consequence of the large number of new inhabitants that flocked to the city, a febrile activity took place in the construction of houses and palaces. According to calculations sufficiently approximate, from

1870 to 1891, 338,542 rooms were made available by means of the erection of new buildings and the addition of new stories to the old houses. With all this, the population has not yet sufficient habitations, because its density is excessive, as one can deduce from the following comparative figures :—

NUMBER OF PERSONS LIVING IN 100 SQUARE METRES OF SURFACE BUILT UPON. —ROME, 8·87 (1889); Naples, 8·29 (1890); Turin, 6·58 (1891); Florence, 4·72 (1887); Paris, 4·30 (1891); Brussels, 4·33 (1891); Hamburg, 2·72 (1890); Dresden, 3·04 (1891); Vienna, 6·76 (1890).

It is clear, then, that the inhabitants of Rome ought to expand over a larger area, and that even when they have occupied all the houses in construction, or left in a more or less advanced state, there will not be such a thinning of the population as one finds at Florence or Turin, and which is truly required by good hygienic regulations.

The causes which up to now have prevented the scattering of the inhabitants are many.

Above all are the conditions of viability; streets narrow and winding, ascents and descents, insufficiency of good and economical means of communication, all counsel the citizens to remain in restricted central habitations, rather than to seek for more commodious and airy apartments at the periphery.

The abandoned state in which the extra-mural quarters are found, prevents the inhabitants from living there, and, consequently, incentives are wanting in those parts for edilic development.

The habitual occupations of the Roman citizens, almost all employed in public offices or local commerce, also

contribute to maintain the density of the population around certain centres.

But the cause that above all produces this overcrowding is the high rents, which are disproportionate to the means of the generality of the inhabitants, and higher than the average of other great inhabited centres, much richer in resources.

An unfurnished apartment consisting of six rooms, each with at least one window, including a kitchen, but excluding the entrance hall or passage, with a good stair, in a decent state, costs approximately :

At Rome, francs per month : —In central positions, 100 to 150 ; the Macao quarter, 70 to 100 ; the Equiline quarter, 65 to 90 ; the Ludovisi quarter, 75 to 100.

At Genoa, francs per month :—In the commercial quarter, 100 to 140 ; in the new quarters, 90 to 130 ; at the outskirts, 50 to 60.

At Turin, francs per month :—In the commercial centres, 70 to 80 ; in the new fashionable quarters, 60 to 70 ; in the less central quarters, 45 to 55 ; in the quarters of the lower middle classes, 30 to 40.

At Florence, francs per month : —In a good position, 40 to 50 ; in a bad position, 20 to 30.

At Bologna, francs per month : —In the centre, 50 to 60 ; in the outskirts, 25 to 30.

In Paris, Berlin, and Vienna, the rents are a little higher than in Rome ; in London, on the other hand, one may consider them about the same or a little lower.

Also at New York, a family with a modest income can find a suitable apartment for a sum equal to that which he would spend in Rome.

Now, considering that in London and New York work is more plentiful and better paid than it is in Rome, it is

clear that in those cities families must feel very much less the sum they spend for lodging.

If we search for the reason through which one can find relatively cheap lodgings in such populous centres, it is found in the fact that the population is scattered over a very large surface and has not a tendency to centralize, because it can make use of rapid, economical, and continuous means of communication

## CHAPTER VI.

## FOODS AND DRINKS.

## THE SANITARY INSPECTION OF FOODS.

It is with justifiable pride we can say that from the most ancient times laws and regulations for the sale of alimentary products have been exercised in Rome.

Other nations know that the laws of the ancient Romans were almost identical with those which, at the present time, are in force in the most civilized States. Fortunately we possess documents of the highest historical value in relation to this subject.

In the "*Acta populi romani diurna*," that is, in the most ancient newspaper we know, written 168 years before Christ, one reads that the edile Titinius had condemned the butchers, for having sold meat to the people which had not been submitted to the inspection of the authorities. The fines were expended in erecting a statue to the goddess Hygeia. Tiberius wished to regulate yearly the price of foods, and ordered the ediles to inspect rigorously the taverns of the cooks and of the wine sellers.

The Cornelian law, issued under the pro-consul Sylla, prescribed to the ediles the inspection of the *quality* of the alimentary substances.

The *præfectus annonæ* and the *præfectus urbis* were positions corresponding to those of Assessor of Hygiene and Urban Police of to-day, with analogous duties.

The best traditions of ancient Rome have not reached us, as they have undergone the fate of the great Empire,

and have disappeared with it in the darkness of barbarism.

Even in recent times, we find in Rome excellent regulations for directing and protecting the public health.

Thus, for example, for impeding the diffusion of epizöotic diseases and their transmission to man, the so-called *Communal Sanitary Deputation* existed up to a few years ago. It was constituted of upright and skilful persons, selected from the class of raisers and sellers of cattle, and its duties were to carefully watch, each member in his own division, that the regulations were exactly carried out. These deputations worked very well, either because the members were faithful and intelligent without exception, or because these persons possessing large flocks, had great interest in denouncing the epizöotic diseases as they appeared, in order to obtain from the authorities the carrying out of proper precautions for preventing the spread of the epizöotic.

In 1881, the duty of reporting the first appearance of epidemic diseases in cattle was entrusted to a body of inspectors, by means of a cattle tax. At the present time, the veterinary surgeons of the *Agro Romano* perform this duty.

But these inspections refer to living animals, and it is clear that they only indirectly guard the public health.

A special service was, therefore, necessary, for the purpose of verifying the condition of the meat at or before the time it is sold by the butcher to the consumer.

This special service was formed in 1879, and later on it was extended to all foods, being enlarged and organized in such a way as to answer all requirements from the chemical and micrographic points of view.

In the public markets, butchers' shops, and other places of sale, the inspection is entrusted to special experts, *vigili sanitari*. They have sufficient practical knowledge to judge at a glance damaged and sophisticated victuals. The scientific judgment of the quality is reserved to the chemical and medico-micrographic laboratories. Both these are in connection with the office of Hygiene in the Campidoglio.

The chemical laboratory is situated at 33, Via Fenuccio, with a branch in Ripa Grande for the examination of wines ; the micrographical laboratory is at the Mattatoio.

For foods which arrive by railway, there is a suitable service at the Stazione di Termini.

#### THE MUNICIPAL MATTATOIO.

We find it recorded that, in ancient times, under Nero, a building was raised in a very large square in Rome, called the great market, used exclusively for killing cattle. The building was provided with an abundance of water. The Senate had a bronze medal, on which the magnificent façade of the building was represented with the inscription, *Macellum Augusti*, coined for the inauguration of the solemn opening feasts.

Soon afterwards, another building destined for the same purpose was erected, and it was called *Macellum Liviae*.

In modern times, we all remember the public abattoir, situated in the neighbourhood of the Piazza del Popolo. It was constructed in 1825 by Leo XII., and used up to our days.

But on account of the great increase of the city since 1870, and the progress of public hygiene, it was found that this slaughter-house was not suitable for its purposes, and it was decided to build a new one.



An area was opportunely selected on the banks of the Tiber, below the city, and between the walls and Monte Testaccio. Here the inconvenience lamented in the old establishment, that the refuse of the slaughter-house infected the waters of the Tiber, before it left the city, has been avoided.

The execution of the work was entrusted to G. Ersoch, the architect, who completed it in a very praiseworthy way.

All the specialists consider the new Mattatoio to be admirable, and M. Pion, the veterinary surgeon of the great abattoir of La Villette in Paris, has declared it to be the finest and most complete of all those he has seen, and he has also said that in the new building projected in Paris, the builders and the architect will profit by what has been done here.

The establishment consists of four immense slaughter-houses, destined for the killing of cattle, situated symmetrically, and flanked on one side by a series of stalls for the tame cattle, and on the other side by a series of iron stalls, for the wild cattle of the Roman Campagna. Besides these, there is a fifth slaughter house, but smaller, separately placed, and which is used half by the military administration and half by the Jewish community.

These well lighted slaughter-houses, lined externally with travertine, and internally for a certain height with marble, are vast sheds, divided internally only by iron columns, which form so many small divisions. Each division has in the centre its common road, flanked on both sides by two small channels, along which water continually runs, abundantly and quickly, which ensures the greatest cleanliness. There is a suitable building for the slaughtering

of kids, and symmetrically to this the scalding-house for pigs.

This scalding-house, destined for the killing and the first dressing of pigs, has given rise to some observations by interested persons. The want of space and light is especially complained of; but even as things are now, they kill and prepare there, in one day, about 1,800 pigs. It would be very desirable to adopt in this part the special system of ventilation invented by Alexander Huber, of Cologne, and applied for the first time by Dessau, by means of which one obtains the rapid removal of the vapours which are raised by the boilers for the scalding, and the stench which necessarily accompanies them.

With this system of ventilation, the workmen are more comfortable, and the inspections can be made with greater diligence.

The service of sanitary vigilance in our Mattatoio is excellently performed, under the direction of Dr. Nosotti, by eight veterinary surgeons, who have at their disposal a laboratory supplied with everything necessary for microscopical and bacteriological examinations, and a small building, divided into compartments, for the animals which serve for experimental inoculations.

Animals excessively deficient in nutrition are rejected. Those which, after being slaughtered, are observed to be affected with diseases dangerous to the public health, are treated in a special section of the establishment.

The treatment, made with the De la Croix system modified, has for its aim the destruction of the diseased portions of infected meat, making use, however, of the organic substance which represents a valuable material for industries and agriculture.

The system here in use marks a notable progress on the old method of destruction, but it is not altogether free from inconveniences, and it requires more improvements still, and to be rendered more economical.

### BEEF AND VEAL.

They slaughter on an average the following numbers of cattle in a year in Rome : — oxen, 20,000 ; cows, 10,000 ; calves, 16,000.

The Agro Romano and the province of Rome furnish scarcely a fifteenth of the veal, and a fifth of the full-grown animals. The rest come from the following provinces : — Le Marche furnishes 9,000 head, Umbria furnishes 5,000 head, Tuscany furnishes 8,000 head, Venice furnishes 5,000 head, Sardinia furnishes 4,000 head.

The remainder comes from the other provinces in various proportions. The best cattle come from Tuscany, next that of Marche, Umbria, Romagna, etc.

The least appreciated are those of the Roman Campagna, appertaining to the breed called *brada*, which live in a wild state, and they are nearly always very thin.

The same can be said for the wild cattle which come from Sardinia, where they have as bad a pasturage as that of the Roman Campagna, and they arrive here weakened by the fatigue of the journey, which sometimes lasts for five days, without food and with little to drink.

In conclusion, the beef which is eaten at Rome is three fifths bad, one-fifth mediocre, and the remaining fifth good.

This is due to the conditions of the market. First of all, the cattle, before they reach here, make a long voyage, without food or drink. Then they are still kept fasting, because the tax is paid in proportion to the weight of the

animals. Finally, the want of refrigerating chambers compels the sale of the meat soon after it is killed in the warm weather, when it is tough and hard.

Add to this, that before reaching the consumer the meat passes through the hands of the wholesale buyers, of seller No. 1, and seller No. 2, and it results that one has *bad meat at high prices*.

All this happens in this happy Latium, *ferax omnium rerum*, as Strabo said, where the pastures are green even in January. At Milan, Turin, and Bologna, with the land covered with snow, one eats splendid meat, and at a less price.

[The foregoing remarks of the author on the quality of the beef sold in Rome are, in my opinion, too severe. There is no doubt that one can rarely, if ever, get beef equal to the first quality of English, but, notwithstanding this, good beef is to be had in most of the best butchers' shops in Rome. The veal is, as a rule, very good.—

TRANSLATOR.]

#### MUTTON, LAMB, AND KID.

Mutton is little appreciated in Rome, so that during the year not more than 5,000 sheep are killed.

Lamb, on the contrary, is much esteemed, and a large quantity of it is consumed. In the city they kill about 12,000 lambs, but a greater quantity enters it already slaughtered.

About 500,000 lambs are eaten every year by the population. Of these, 350,000 arrive by the railway and are examined by suitable officials at the station, but 150,000 enter by the various gates and partly escape sanitary control.

This is not good; however, it is well known that lambs of a few days old are rarely diseased, and almost never suffer from tuberculosis, because the sheep is an animal that is rarely attacked by this disease.

About 12,000 kids are annually slaughtered in Rome.

### PORK AND BACON.

On an average 40,000 pigs are slaughtered; some years as many as 50,000. Almost all this meat is consumed in the city, none of it being exported as bacon.

The pigs almost all come from the province of Rome: 5,000 come from Naples, and about the same number from all the other provinces taken together.

They are rather small, but good in quality: the *white ones* of Naples are preferred, and the so-called *pelatelli* of Caserta.

The pork is good, and moderate in price, but the curing and salting have not reached the degree of perfection met with in other Italian provinces.

### HORSEFLESH.

Horseflesh, provided it is not that of animals which have died from disease, is considered eatable, and, consequently, its sale is permitted by law.

Up to a little time ago, on account of the repugnance that people had for this meat, its slaughter and sale were not permitted in an official way. But the consumption of horseflesh was clandestinely carried on in the city, and not only was the flesh of horses which were killed, because they were too old to work or had become useless through accidents, sold, but also that of animals which had died of dangerous diseases.

In consequence of this state of things, serious inconveniences took place.

It is very true that even in remote times, a *sardigna* destined for the industrial preparation of horses dead from natural causes existed, but the bad surveillance of this establishment, situated on the banks of the Tiber beyond the Porta S. Paolo, permitted all sorts of abuses, owing to want of knowledge on the part of the personnel of the service.

The *sardigna* was under the control of the Congregation of Coachmen, to whom by a Papal bull this industry had been conceded.

When the great edilic works for the transformation of the Capital had almost doubled the number of horses in the city, this mortality much increased, and with it the badly inspected work of the *sardigna*, and that of secret slaughtering.

The consequence of this was the frequent occurrence of cases of *human glanders*, certainly contracted by eating or handling glandered horseflesh. The cases of this disease, followed by death, observed in the hospital of S. Spirito, could not but at least impress the Public Health Authorities.

Meanwhile an exciting fact happened in the city.

In one of those large menageries, which, in later years, have made their appearance in some of the squares, one day three magnificent lions were taken ill and died, with great loss to the proprietor. It was thought that they were poisoned, but on a post-mortem examination being made, the anatomico pathological signs of death by glanders were discovered. On investigation, it was found that the disease was caused by giving the lions horseflesh to

eat, which was clandestinely bought as healthy, but it was really a part of a horse that was killed for *glanders*. A veterinary surgeon was able to identify the horse, through having casually observed in a corner of the menagerie a hoof with a registration number stamped on it, by which the animal was easily identified.

In consequence of these facts, and following the example of other cities, other regulations were made.

The Assessor, Dr. Roseo, systematized the service in a rational way. A special slaughter-house for horses was built in connection with the Municipal Mattatoio, where the horses, before they are killed, are carefully examined by the municipal veterinary surgeons. If they are healthy, the flesh is allowed to be sold in suitable places, situated in the Trastevere, Viale Principessa Margherita, and Piazza Sallustiana. The meat is there sold as healthy horseflesh.

The *sardigna* is also the object of special regulations, a municipal veterinarian is entrusted with its special surveillance. But it is too far from the city, and it is regulated in such a way, that it does not guarantee the public from the possibility of fraud.

Through an ancient concession, a part of the flesh, when cut into small pieces, can be introduced into the city as food for cats and dogs.

All this meat, however, is not free from disease, as some few years back the cat of the Office of Hygiene itself, fed with portions of this meat, freely sold in the city, died of *glanders*.

In truth, the destruction or commutation of the privilege conceded to the Congregation of Coachmen, was attempted, by preparing the horseflesh at the Public Mattatoio, where a large place exists, fitted up with all



modern requirements. But up to now nothing has been decided, because the Congregation of Coachmen derive no little profit from this industry.

The number of horses slaughtered in 1893 was 270; now three times that number are being killed.

In Paris also the use of horseflesh has notably augmented. In 1887, they killed 2,039 horses, and in 1892, 20,000, besides 30 mules, and 300 asses. Two-thirds of this meat is used for making sausages, according to the opinion of L. Villain, the chief inspector of meat in Paris.

#### POULTRY.

Poultry is declining in quality and increasing in price. This depends above all on the abandoned condition of agriculture around the city, and the consequent deficiency of the food of the so-called animals of the farmyard.

The poultry which is consumed in Rome comes in great part from Umbria, the Marche, Tuscany; it arrives after long suffering on the way, and is sold to the public in such conditions as to cause legitimate suspicions as to its health.

Large and fat fowls are sold in very few shops. Guinea fowls are also sold after long fasting, of which one manifestly sees the traces on their lean bodies. The *Roman poulterer*, who recognises the little attractiveness of these animals, has discovered a very economical means of fattening them. He, by means of a tube introduced between the skin and the flesh, blows air into all the subcutaneous cellular tissue.

#### FISH.

Fish is very abundant and of good quality in Rome. The sea fish comes from the Adriatic and Tyrrhenian

coasts, and the fresh water fish from the numerous surrounding lakes ; the rivers which flow through the region, and the ponds, also abundantly furnish it.

The retail sale of fish is not sufficiently inspected by the authorities. There exists only a solitary and wretched market, in the Piazza delle Coppelle, and, consequently, the greater part of this rich food is sold in private shops and in the streets. Inspection then is impossible, and the cases of semi-poisoning by eating bad fish are not infrequent.

Ice-houses being wanting in the city, the fishmongers sometimes preserve the fish with salicylic acid, and also with a solution of *corrosive sublimate*. It is wise, therefore, to thoroughly wash the fish before cooking it.

The municipal authorities ought to erect small markets as quickly as possible, through which alone inspection can be efficacious. Some stone tables and an economical roof are not so expensive that the Commune of Rome cannot afford them, particularly as the necessary spaces are not wanting.

Into the central market of S. Teodoro about a million and a half kilogrammes of fish are introduced every year. In 1893, 531,000 kilogrammes were sequestered because they were spoiled, and 666,000 kilogrammes in 1894.

#### THE AMOUNT OF MEAT CONSUMED BY THE INHABITANTS OF ROME AND PARIS.

From the studies made by Commendatore Nosotti, the director of the Roman *Mattatoio*, it appears that each inhabitant of Rome consumed on an average :

Butchers' meat, 1893, 45'954 kilogrammes : per day, 0'125 kilogrammes. In 1894, 42'228 kilogrammes : per day, 0'115 kilogrammes.

To this must be added fish to the extent of about two kilogrammes each inhabitant per year. The fresh meat which arrives in the city is also included in the calculation.

The inhabitants of Paris consume, according to L. Villain, the head of the meat service in that city :

No. of kilogrammes per year :—Butchers' meat, 64·586 ; pork, 10·542 ; game, 11·239 ; fish, 10·201. No. of kilogrammes per day :—Butchers' meat, 0·176 ; pork, 0·028 ; game, 0·030 ; fish, 0·027.

It, therefore, appears that we eat less meat than the Parisians. This is partly due to the customs of the population, who eat large quantities of vegetables ; partly to the price of meat, which, as has been already stated, is too dear.

#### MILK.

The milch cows of the city, the suburbs, and the Agro Romano, are subjected to the rigorous visits of the municipal veterinary surgeons, and are kept under constant observation by them.

Every cow destined for the sale of milk must be reported to the sanitary officials, and be subjected to examination. When it is proved to be healthy, the year is marked on its horn by means of a red-hot iron stamp. Each year, in the months of April, May, and June, a general inspection takes place, for the purpose of examining the state of health of the milch cows.

Cows suspected of tuberculosis are, on the advice of the veterinarian, and at the owner's expense, subjected to the test of *tuberculin*, with the object of rapidly ascertaining the existence or not of the disease. Those

suffering from tuberculosis are killed, and the others are immediately returned to the owners. Suitable stalls for this purpose have been set apart at the municipal Mattatoio.

Notwithstanding this proof, however, recently adopted, it is possible that some tuberculous cows may escape notice, and for a variable time may supply milk to the consumers.

The life shut up in stalls, with little air and light, predisposes to this terrible disease, and the communal veterinary surgeon cannot be constantly at the door of the dairies, with the syringe full of *tuberculin* in his hand. Even if the vigilance were the most perfect possible, absolute security one cannot have, and it is now placed beyond doubt that the tuberculine reagent is *nearly* always certain, but *not always*.

It is better to protect the animals from contracting the disease, by placing them in the most favourable hygienic conditions.

The tuberculosis of cattle in Milan is very frequent, because they are kept, and sometimes crowded together, in narrow stalls, and during the winter they remain there for months without going into the open air; tuberculosis is very rare in the cattle of the Agro Romano, because they nearly always live in the fields.

Experience then teaches us the means to adopt. To prevent tuberculosis, not being able to keep the milch cows in the open air, as in the *wild* system, or without stalls, one should endeavour to keep them many hours of the day in the fields, and at other hours in stalls well lighted and ventilated, with impermeable and properly inclined floors. Good food, consisting of hay, and not

the refuse of the greengrocers' shops, will also contribute to the health of the animals.

In the months of April, May, and June, permission is accorded for the daily introduction into the city in the early hours of the morning of goats destined to supply milk. The healthy condition of the animals is verified by the communal veterinarian by means of a certificate, and a brand on one of the horns of the animal.

It is an ancient custom which has nothing to commend it.

#### FUNGI.

The introduction of fungi into the city is only permitted through the barriers Portere, Porta Maggiore, Ponte Milvio, Ponte Salario, Porta Appia, Nomentana, Tiburtina, Cavalleggeri, and the customs office at the central station, and that of the tram for Tivoli.

The introducers must go, accompanied by a guard, to the sanitary office in Via S. Teodoro, or to another place indicated by the guard, where the fungi are examined by the sanitary official or one of his assistants.

The sale of fresh fungi, testified by the certificate which proves the inspection of the sanitary official on the day on which they are placed for sale, is permitted, under the special surveillance of the municipal agents, to those sellers who have obtained either an annual or daily license, in the following places :—Piazza dei Cerchi, Piazza del Paradiso, Piazza del Madonna dei Monti e dei Zingari, Via dell' Olmata, Via Gaeta, Via Collina, Piazza di Monte d'Oro Piazzale Porta Angelica, Piazza S. Cosimato. The license to sell fresh fungi in shops is conceded to those shopkeepers who make a special application to the Syndic and offer a proof of respectability.

The sale of fungi is absolutely forbidden by hawkers, whether they have or have not had the fungi examined by the sanitary official.

The permission of introducing dry fungi is limited to the species *Boletus edulis* (fungi of Genoa), *Agaricus prunulus* (black-thorn fungi), *Agaricus melleus* (*famigliola*).

The introduction of a mixture of dry fungi is forbidden.

#### WINES.

The hills near Rome produce much-esteemed wines, which are nearly all brought into the city.

The consumption of wine is, however, so great that besides the so-called *Castelli Romani* wines, they come here from almost every province in Italy.

Piedmont, Venice, Tuscany, Puglia, and Sicily send enormous quantities of wine here, and the Roman dealers mix them in such a way as to produce palatable commercial types.

The site where the *Italianization* of wines prevails is the Testaccio, and without fear of contradiction one can assert that there the work of *unification* takes place with more profit and less talk than at the *Montecitorio* [the Italian House of Commons].

Be that as it may, in Rome one finds wines to please every palate, however exacting, and the generality of the inhabitants consume a drink hygienically laudable and cheap.

## CHAPTER VII.

## ROME AS A HEALTH RESORT.

BY DR. EYRE.

THE reader who has carefully studied the previous chapters of this little book will have found sufficient evidence in them for supporting the claims of Rome to once more take its place amongst the best and most attractive health resorts in Europe. It would be very interesting to trace the cause or causes of the decadence of Rome as a climatic station within the last thirty or forty years, but in a chapter like this it is impossible to enter into the subject but in a very superficial way.

Sir James Clarke, who, in his day, was certainly the greatest authority on climate in relation to the treatment of diseases—more particularly on its curative effects in lung and bronchial affections—considered Rome to be the best and most desirable residence on the Continent for diseases of the chest. He says, in reference to phthisis : “ I have known many persons who left England with such manifest symptoms of disease as to afford ground for serious apprehension ; these symptoms continued during their journey, but totally disappeared after a short residence in Rome,” and again : “ It (Rome) is very beneficial in bronchial affections, especially in cases where the diseased organs have suffered from great irritability.” These decided opinions of Sir James Clarke are all the more valuable because he knew Rome and its climate well, having practised here as a physician for eight years,



before he, in 1826, settled down in London. In those days, now more than seventy years ago, the climate of Rome was much the same as it is to-day, but its sanitary condition was very different.

There is no denying the fact that however much Rome may have suffered from the picturesque point of view, it has enormously gained from the hygienic and public health points of view within the last twenty-five years. This being so, it is only logical to conclude that, the climate remaining the same, the Rome of the present time ought to be a more desirable health resort than it was some seventy years ago.

Doubtless, the various political changes that Rome has undergone within the last half century have been among the causes of the Eternal City having gone out of fashion as a health resort ; but I believe the chief cause to be the erroneous impression which the majority of educated people, and even of the medical profession in Europe and America, hold—that Rome is a very unhealthy city, and that it is a hot-bed of malaria. Nor can one blame them for thus thinking, as up to the present time very little has been done by the Romans themselves or others in enlightening those people as to the great improvements which have taken place in the sanitary condition of Rome within the last twenty years. There is no doubt that at one time malaria was a prevalent disease here, as there is no doubt now that persons can reside in Rome during the *whole* year without running the least risk of being infected with malaria.

I am afraid, also, that some of the Roman doctors are much to blame in reference to the idea that Rome is still malarious, as they often see malaria in catarrhal affections

of the throat and the gastro-intestinal tract, where the *plasmodium malarie* is certainly not the causative agent. I should be very chary in making this statement from my own observations, but I give it on the authority of some of the ablest of the Roman medical men.

Another cause is the jealousy and self-interest of other Continental health resorts and cities. They well know the wonderful attractions that Rome has for all nations, and they are only too glad to take hold of every opportunity of decrying Rome. The ignorance also shown by some writers in reference to the climate of Italy generally is truly surprising. Thus one of them who has written a book on the health resorts of Europe has actually stated that "no climate in the world has been so favourably misrepresented as the Italian. Poets and novel writers have raved of the 'blue skies of Italy' so much, and have still such a strong influence in the matter, that people cannot understand that it is not true." Italy has, at the present time, sufficient to endure without robbing her of "her blue skies," which still exist, notwithstanding the very dogmatic opinion of this writer.

For a given place to claim for itself the title of a climatic station, it is necessary that in it a delicate person can be out of doors with comfort and safety during the greatest possible number of hours in the day. This condition can only be fulfilled where one has a clear sky, a moderate temperature, and freedom from cold and high winds. To these one must add the personal susceptibilities of the individual as to the form of climate, bracing or relaxing, etc., and the ability of the physician in not only directing the treatment of the patient, but also in obtain-

ing his confidence. In health resorts, also, the water supply, drainage, food, and other hygienic conditions, should be duly considered. I now proceed to briefly discuss these questions in reference to the Eternal City, premising that an ideal climate, for each individual case, nowhere exists, nor is it possible to obtain *all* the necessary conditions for a perfect climate in any particular part of the world.

Rome is situated in the centre of the Roman Campagna, which is an undulating plain between the Tyrrhenean Sea, which bounds it on its western and south-western sides, and the Alban and Sabine mountains on the south, south-east and east. Directly north is the isolated mountain of Soracte, to the north-west are the mountains Sabatino and Cimini, and in the extreme north-western horizon are the Tolfa group, which lose themselves in the sea at Civita Vecchia. Thus Rome is more or less surrounded by mountains, excepting on the west and south-west. The city is built in a valley on both sides of the Tiber, about 13 miles in a direct line from the sea, and an equal distance from the principal mountains. From the valley it extends to the slopes and summits of the surrounding hills, especially those on the left bank of the river. The Tiber runs through the city in three bold curves for about three miles, and is now enclosed between magnificent embankments, which will be completed within the next year. Its average breadth is 109 yards, and depth from 20 to 26 feet, which during floods rises to 40 feet or even more.

The right portion of the city, consisting of St. Peter's and the Trastevere, lies between the river and the Vatican and the Janiculum hills. The left, which is much the larger

part of Rome and the most important, excepting St. Peter's and the Vatican, covers the valley—the ancient *Campus Martius*—the Pincian, Quirinal, Viminal, Esquiline, Palatine, Cœlian, and Aventine hills. Both parts of Rome are connected by means of ten bridges. The city is of an irregular polygonal form, its greatest diameter being about three miles. The streets are narrow and winding in the ancient quarters, but in the new they are wide and straight.

Up to the year 1870, more than a third of the left part of the city within the Aurelian walls consisted of vineyards and fields, but since that time nearly the whole of these gardens and fields have been built upon, and they now form the healthiest part of Rome.

The original subsoil of the city consisted of clay and marl mixed with tufa, which rendered it an unfavourable site for a great city on account of its dampness. In the course of centuries, however, this subsoil has not only been broken up by sewers, drains, etc., but it also has been covered over, in some places to a depth of 50 feet and more, by the débris of former buildings, which contained a large proportion of calcareous matter. Besides this, the soil removed for the foundations of many of the ancient buildings was used for the purpose of filling up hollows in other parts of the city in those times. The drainage of the new quarters, which had not been built upon for some hundreds of years, and the embankment of the Tiber, have added to the lowering of the subsoil water, as has also the paving of the streets and the courtyards, and the carrying away of the rain water from the roofs of the houses into the sewers.

The *population* of Rome was estimated to be 476,917

on March 31 of this year. This population consists of three categories : 1, the permanent residents ; 2, the army ; and 3, the fluctuating population. The birth-rate in 1895 was 25·7 per 1,000 living, and the death-rate of the resident population was only 17·3 per 1,000 living. The death-rate of the whole population was 21·6 per 1,000 living ; this latter includes not only the deaths occurring amongst the army and the visitors, but also the deaths of those persons who came from the surrounding districts to be treated in the Roman hospitals and there died. There is a considerable English and American resident colony in Rome, and the number of visitors from English-speaking countries who visit Rome yearly must be many thousands ; yet the number of deaths which have taken place amongst all these people in the 15 years, June 16th, 1881, to June 16th, 1896, was only 248, or a yearly average of 16·5 deaths from all causes. I have lately gone through these death records, and I found that only *four* deaths out of the 248 were certified as being caused by malaria, and the last death from malaria took place in July, 1886, more than ten years ago.

The principal factors to consider in relation to *climate* are the *latitude, altitude, atmospheric pressure, temperature, rainfall, prevailing winds, and humidity*; as, however, all these subjects have been more or less fully treated in the second chapter, I will only discuss them in a summary way here.

Rome is situated in north latitude, 41° 53' 54", and, consequently, possesses a temperate climate. Its mean height above the sea-level is about 100 feet ; the height varies from 48 to 63 feet near the Tiber, to 245 feet on the Esquiline, and 275 feet on the Janiculum.

Its mean atmospheric pressure is 761·9<sup>m</sup> w. The greatest barometric changes take place in October and April. Gales are very rare in Rome, and never blow with extreme violence. In fact, the *most striking peculiarity of the Roman climate is the absence of high winds*. The air is wonderfully pure and clear, owing to the almost complete absence of smoke, even in the winter months. This is particularly noticeable when one looks down on Rome from a height, as the Janiculum, for example, or from the Piazza S. Pietro in Montorio, from which one has one of the most magnificent views in the world. There lying at one's feet is the Eternal City, with its pagan ruins and Christian temples ; in the far distance the mountains, capped with snow in the winter ; between the city and the mountains, the undulating and bare campagna, and, above all, the beautifully blue Italian sky. The absence of smoke is due to wood and charcoal being almost exclusively used for cooking and heating purposes ; to Rome being a purely residential city, and, therefore, possessing no factories and few industries, and to the Romans very rarely using, even in the coldest winters, fires for heating their rooms.

The *mean yearly movement of the air* is only five miles an hour, which, according to the Beaufort scale, is a light air. This gentle movement of the air is a great advantage in winter, as the north wind, which chiefly blows at that season, if strong, is decidedly cold and bracing ; but when under eight miles an hour is delightful for healthy people, and most delicate people also enjoy it. Next to the north come the southerly winds, which are essentially sea breezes. They very often alternate with the north wind, or *tramontana*, especially in the summer months.

The sirocco or south-east wind, which, fortunately, does not often blow, is a moist and enervating wind. It produces languor in most people, in the Italians especially, but I have known patients to enjoy it ; this, however, is very exceptional.

The *mean annual temperature* is  $60^{\circ}$  F., about  $10^{\circ}$  higher than that of London. The mean annual oscillation is  $18.2^{\circ}$  F. ; the greatest mean monthly oscillation occurs in July ( $20.6^{\circ}$  F.), and the least in December ( $12.5^{\circ}$  F.). The coldest months are January, with a mean temperature of  $43.8^{\circ}$  F., and December  $46.5^{\circ}$  F. The mean temperature of the other months is : February,  $46.5^{\circ}$  ; March,  $50.5^{\circ}$  ; April,  $56.8^{\circ}$  ; May,  $64.4^{\circ}$  ; June,  $71.2^{\circ}$  ; July,  $76.6^{\circ}$  ; August,  $76.0^{\circ}$  ; September,  $70.8^{\circ}$  ; October,  $61.1^{\circ}$  ; and November,  $52.0^{\circ}$ . The daily temperature increases rapidly in the morning, and more slowly descends in the evening. The hour of maximum temperature corresponds to a little after noon, and not to about 3 p.m. as in most other countries. This is probably due to the fact that the sea breeze usually arrives in Rome soon after mid-day and reaches its maximum about 3 p.m. The hour of minimum temperature undergoes considerable changes, but it generally corresponds to the sunrise. The difference between the day and night temperature is very considerable, as it is in all countries with a clear sky.

Snow rarely falls in Rome, and never lies for more than a few hours. It falls on an average on two days in the year. Frosts usually occur several times between November and March. The greatest number of frosty days are generally in December, although the daily temperature of January is the lowest of all the months. On occasions, the ther-



monometer may fall some degrees below freezing point for a few consecutive nights.

The *mean annual rainfall* is 778·2 millimetres (30·6 inches). The mean annual number of rainy days is 96·4. This number, however, includes those days in which even a few drops of rain fall, and, consequently, includes a greater number of wet days than would be reckoned if the English rule, viz., that those days only are considered rainy in which at least a measurable quantity (·005 inches) of rain falls, were adopted. The wettest months as a rule are October, November, and December, and the driest July and August. The rainfall, however, varies very much from year to year and month to month. Very frequently in the winter for weeks on end there is not a drop of rain, and one has cloudless skies; at other times it may rain more or less for days, but it is very rarely that a person cannot go out for a walk some part of the day, as the streets, being nearly all paved, very quickly dry. The average monthly number of rainy days is: 9·9 in October; 11·4 in November; 10·4 in December; 10·2 in January; 8·6 in February; 10·1 in March; 9·7 in April; 7·7 in May; and 5·7 in June. During July and August the mean number is 5 or 6, and 7 in September. The mean number of cloudless days in the year is 155; mixed, 127; and 83 clouded days.

The *mean annual percentage of relative humidity* is 65°. This, according to Vivenot's division, places Rome amongst the moderately dry climates, that is to say, those between 56° and 75° of relative humidity. The humidity is greatest in December (74 per cent.), and least in July (53 per cent.). Rome is generally considered to possess a humid climate, but this is a mistake, as the hygrometrical

observations prove. Mists are occasionally seen, generally in the early mornings, even in the summer. These mists are due to the condensation of the aqueous vapour produced by the considerable fall of the temperature which takes place towards sunrise. Its position being about an equal distance from the sea and the mountains, gives Rome a mixed climate, with the maritime type prevailing. This is shown by the smaller oscillation of the daily temperature than in continental places, and the continental type is indicated by the lowness of its percentage of relative humidity.

The other factors which affect the healthiness of a place, such as the water supply, sewerage, food, and other hygienic conditions, having been already fully dealt with, it is necessary for me to say little about them here. The water supply, which is on the constant system, is one of the purest and certainly the most abundant in the world. The sewerage is very good, and when the whole of the new scheme is completed it will be excellent. The food is, on the whole, very good; and, notwithstanding the author's severe remarks in reference to the beef one gets here, it is possible to get good beef without difficulty, but it certainly is never equal to the best English or American beef. The mutton as a rule is not good, but the veal is excellent, and the lamb is very tender. Fowls are small but tender; the fish is very good, and excellent game can also be had. Fruit and vegetables are varied and delicious.

The streets are beautifully kept, so much so that visitors generally remark upon it. The scavenging is done in a primitive way, by men with long brooms, a basket, and a hand cart. Owing to the almost total absence of heavy

traffic, there is comparatively little wear and tear of the lava paving of the streets, and the comparative absence of dust in Rome is very striking.

From this brief analysis of the climate and hygienic condition of Rome, I believe we have abundant evidence for its resuming its old place amongst the health resorts of Europe.

I will conclude this chapter by offering some suggestions to those invalids who intend to make Rome their residence during the winter months. As for the ordinary visitor, he can live in Rome as he would in London or any other healthy city. It is advisable he should wear flannel underclothing, and that he should keep his bedroom windows closed at night, in consequence of the sudden fall of temperature which usually takes place about sunrise. He should also be careful to take his meals regularly, and not to go into cold churches or picture galleries when the skin is freely acting, otherwise he is liable to get a chill. With reference to the taking of stimulants, there is no more necessity to take them in Rome than there is in England or America, but if a person is accustomed to take wine at meals, the best wines to take here are the red or white wines of the neighbouring hills called the *Castelli Romani* wines, and one of the best of these is the Scots College wine.

The most suitable time to arrive in Rome for those invalids who intend to winter here is during the month of October, and they can comfortably remain until the end of May, in fact May is one of the most delightful months in Rome, and the Campagna is then at its best, so that one can make delightful short excursions to Albano, Frascati, etc. Many of the English-speaking residents remain

until the end of June, but after that time it gets too hot for nearly all the foreign residents.

The next question to decide is the residence—whether it is to be in an hotel, pension, or private apartment. For invalids, unless they can have the anxieties of house-keeping taken off their shoulders, there is no doubt that they will be much better off in a good hotel or pension. There are plenty of first-class hotels and pensions in Rome both in the central and older parts of the city, and in the newer and higher quarters. The cooking in those establishments is excellent, as a rule, and the sanitary conditions are quite up to the English standard.

If, however, an apartment be decided upon, I would advise one to be taken in the newer and higher quarters, that is, the Ludovisi, Quirinal, and Viminal. Nearly the whole of this part of Rome, up to fifteen or twenty years ago, was covered with vineyards and fields, and, consequently, there has been no possible defilement of the subsoil. The drainage of the houses is generally good, and the streets are much wider and more airy than those in the older parts of the city.

It is absolutely necessary for an invalid to have an apartment with a southerly or south-westerly aspect, on the higher floors, the top floor if there be a lift and a terrace, because one gets more sun in the winter the higher the floor is situated, particularly if the opposite houses be high and the street narrow. It is also necessary to have either fire-places or stoves in the rooms, as one feels cold during the two or three winter months in the house without fires, more particularly in the damp days which one gets occasionally in Rome in the winter. Wood is generally burnt, and large fires are not required, as the cold is never

very severe. The Romans object to having their rooms heated, as they say that one is more likely to get a chill when going into the open air from heated rooms. I doubt this, as one puts on extra clothing when going out, and is taking exercise all the time. Moreover, as the Romans rarely, if ever, use fires in their rooms, I do not see what experience they can have on the subject. Be that as it may, there is no doubt that English people, and still more Americans, require to have their rooms[warmed for two or three months in the winter, even for the sake of comfort. Of course, care should be taken that the rooms are not overheated ; 60° F. is ample, excepting in cases of illness, where the medical attendant considers a higher temperature desirable.

Before taking an apartment it is necessary to see that it is in a good sanitary condition, quite as much here as it is in England, and it is also advisable to see that the water cisterns, which are usually placed on the terraces or roofs of the houses, are clean, and that the overflow pipe does not open directly into the house drain.

With reference to the rules for the daily routine of an invalid in Rome, it is impossible to give details here. The best course for the patient to adopt is to consult his or her physician on their arrival on these matters, as well as the most suitable part of the city to live in. One can say, however, in a general way, that a delicate person should not go out before 10 or 11 a.m. in the colder months, and should always be in the house by sunset, as at this time, owing to the cessation of the solar radiation, the lower stratum of air becomes chilled for some little time, especially in very clear days. It is well to remember also that the hottest part of the day in Rome is about

noon, and not a couple of hours later, as in most other places.

The persons who are most likely to benefit by the climate of Rome are: the generally delicate; those recovering from acute diseases; those suffering from catarrhal affections of the mucous membranes, more particularly of the throat and the bronchial tubes; those suffering from the early stages of phthisis; from chronic Bright's disease, diabetes, rheumatism and gout. Asthmatics also do very well here as a rule, but asthma is such an uncertain disease in reference to the effects of climate upon it, that one cannot positively state the forms which are most likely to be benefited by a residence here. Rome is also a very suitable place for nervous, overworked, and excitable persons, who cannot sleep well, and require change of air and surroundings, because these patients as a rule sleep very well here; and it is needless for me to say a single word about the attractions and distractions of Rome, they are so universally recognised.

## CHAPTER VIII.

## HYGIENIC SERVICES AND SANITARY AID.

THE OFFICE OF HYGIENE :—Piazza del Campidoglio, sotto il portico del Vignola.

UNDER the Pontifical *régime*, the municipal administration of Rome had not a special office for hygienic services, but the affairs of this branch of the public service, exercised in a very limited way, were attended to by the *Annona and Provisions* Office, to which one physician was attached, with the title of *Communal Sanitary Expert*.

With public sanitary aid, at that time confided to other institutions, the municipality had nothing to do.

The constitution of the Office of Hygiene and Sanitary Aid was reformed in 1870.

At the present time the Office of Hygiene is constituted as follows :—Medical Director, Dr. Cav. T. Gualdi. Section I. (hygiene), chief of section, Cav. A. Sassi. Section II. (sanitary aid), chief of section, Cav. E. Onelli. Medical assistants, Comm. M. Lanzi, Cav. F. Giovanni, and Dr. G. Petraglia. Veterinarians, Dr. L. Valentini and Dr. P. Marcovaldi ; Veterinarian for the Agro Romano, Dr. G. Galeazzi ; Inspector of Sanitary Engineering, Engineer D. Sparato ; to this office appertain also the Micrographical and Vaccine Laboratories at the Mattatoio, and the Chemical Laboratory for the analysis of foods in Via Ferruccio.



## DAY GRATUITOUS MEDICAL AID IN THE CITY.

A service of physicians, surgeons, and midwives for gratuitous medical assistance to the poor at their homes, with the free supply of medicines, has existed in Rome from very remote times, and it was confided to the care of the *Commission of Subsidies*.

Since 1870 this service has undergone various changes, being at one time under the control of the Congregation of Charity, and now under that of the Office of Hygiene ; and in consequence of the changes which are about to be made in the Services of Beneficence in the city it has not yet been definitely systematized.

## NOCTURNAL MEDICAL SERVICE IN THE CITY.

In 1873, a nocturnal service of urgent medical aid was instituted in five pharmacies, and later on others were added. Such pharmacies, indicated to the public by a red lamp, remain constantly open in the night hours, at the expense of the municipal administration. In each pharmacy a physician-surgeon and a guard sit up the whole night.

The physician-surgeon is obliged to attend immediately all urgent calls. He is paid by the municipal authorities ; he is only permitted to receive a fee from those persons who do not belong to the poor classes. His prescriptions are dispensed at the night pharmacies, and for the poor are paid for by the above-mentioned authorities.

## PHARMACIES WITH NOCTURNAL SERVICE.

Masi E., 116, Piazza Vittorio Emanuele ; Peretti C., 227, Via Nazionale ; Scala E., 113, Corso Vittorio Emanuele ; Santi P., 21, Via Vittorio Colonna ; Scelba C., Viale del Re, corner of Via San Francesco.

The pharmacy Bonanni, at the Testaccio, is also used as a special night pharmacy.

#### MEDICAL SERVICE OF THE AGRO ROMANO.

The institution of physicians-surgeons of the Agro Romano took place in 1873; to them is entrusted the treatment of patients who cannot be immediately removed to the city hospitals, and to administer first assistance to all others. To each of these doctors is entrusted one of the *sanitary stations*, or special divisions, into which all the *suburbs* and the Agro Romano proper have for this object been divided. Each of the doctors is provided with the most necessary drugs, which he gives gratuitously to poor patients.

Attached to his residence is an infirmary for the reception of any patient who has no home, and is too ill to be removed to one of the city hospitals.

#### SANITARY STATIONS IN THE AGRO ROMANO.

Via Flaminia, Piazza Tiburtina, Via Appia Nuova, Via Portuense, Monte Mario, Isola Farnese, Fiumicino, Decima, Carano, Via Nomentana, Via Casilina, S. Sebastiano, Via Aurelia, Prima Porta, Torrimpiaetra, Ostia, Ardea, S. Vittorino.

#### THE HOSPITALS OF ROME.

THE HOSPITAL OF SANTO SPIRITO IN SASSIA:—1 and 2, Borgo S. Spirito.

This is the oldest hospital in Rome. It owes its foundation to Ina, King of the Western Saxons, or Anglo-Saxons, who, having abdicated his throne, came to Rome about the year 728 A.D., and wished to build a hospice, or, as it was then called, a *schola*, for his countrymen.

United to the hospice was a church called Santa Maria in *Sassia*. Offa, King of England, having also come to Rome, visited the hospice, and enlarged it, so that his subjects who resided in Rome might enjoy the shelter there given.

Two great fires, one in the year 817, and the other in 847, reduced the building almost to a heap of ruins.

Pope Saint Leo IV. largely subscribed towards the rebuilding of the church and the hospice. Wars—the siege of Henry IV. in 1048, that of Henry V. in 1110, and finally the invasion of Frederick Barbarossa in 1157—were the cause of the complete destruction of the whole hospice, and nothing remained standing but the church. In 1198 Innocent III., desiring to open a hospital for patients, selected the spot where the Saxon *schola* stood, and where, according to Fanucci, Pope S. Symmachus had already constructed a hospital in 498. When the hospital was completed—it was called the hospital of Santa Maria in Sassia—Innocent III., in 1204, entrusted its direction to the monk Guido de Montpellier, founder of the Order of Hospitallers of Santo Spirito, a name which has ever since belonged to this institution.

During the period that the Pontifical seat was transferred to Avignon, the hospital suffered no slight damage, so that in 1471 Sixtus IV. wished to rebuild it, with the assistance of the architect Baccio Pintelli. On the side next the street was then constructed a portico, now walled up, where for a long time the fire-places, for warming the poor people who came for the surplus food of the hospital, were situated. The same Pontiff had a small hall built for the separate reception of noble persons, who, through poverty, were obliged to be treated in the public

hospital. Pius VI. added another large building, which, up to 1870, was used as a military hospital. This building is separated from the principal fabric by a public street, which causes no little inconvenience to the working of the hospital. It was intended to transform this street into a garden, but it has not been carried out, as within the next year or two the greater part of the hospital of S. Spirito will be demolished for the purpose of completing the embankment of the Tiber.

Pius VII., in 1805, allotted some of the rooms for the school of Clinical Medicine, where it still exists, but towards the end of this year it will be removed to its new and imposing seat in the *Policlinico Umberto I.*

The hospital of S. Spirito is destined for the reception of male medical cases, the surgical cases being received in other hospitals. Exceptionally, some women are also admitted.

This hospital does not respond to modern requirements. Notwithstanding the improvements which recently have been introduced, the wards leave much to be desired, and the *locali* destined for the administration are altogether insufficient.

The constructive defects of the fabric are greatly felt, owing to the necessity of having to treat in it almost double the number of patients that it should properly hold.

It is painful to see these long corridors, where overwhelming demands oblige the crowding of the beds together against all good hygienic laws.

The opening of the Policlinico, the embankment of the Tiber, and the new edilic plan in connection with it, it is to be hoped, once more transform these buildings, the

witnesses of so many vicissitudes and so much human suffering. The average number of in-patients is 660.

THE HOSPITAL OF S. GALLA :—Via della Bocca della Verità.

This is a dependence of S. Spirito for chronic cases.

THE HOSPITAL OF S. GIACOMO IN AUGUSTA :—Via del Corso.

In the year 1339 the executors of Cardinal Pietro Colonna, who, in memory of, and at the wish of, Cardinal Giacomo of the same family, had left orders that this charitable institution should be built, founded the hospital, which took the name of San Giacomo *in Augusta*, because it was situated near the Mausoleum of Augustus (*teatro Corea*). It was also called the hospital for *incurables*, on account of the class of patients who were at one time received there.

The building has been many times restored, so that of the ancient construction now nothing remains but the upper part of a gateway, which, by its structure and the coat of arms there visible, appears to appertain to the Colonna, as one also can read in an inscription which was placed there.

The hospital is destined for the reception of surgical diseases of both sexes.

A free surgical dispensary is attached, with an entrance in Via Ripetta.

Although the hospital has been partly restored, it has wards which are very tombs, and *locali* little adapted to the purposes for which they are intended. The average number of in-patients is 300.

THE CONSOLAZIONE HOSPITAL :—Via della Consolazione.

Although this hospital is usually known under the above

name, its true denomination is *S. Maria in Portico, delle Grazie e della Consolazione*, because it has been formed by the union of three different institutions.

S<sup>a</sup>. Galla, matron, daughter of Symmachus Junior, patrician and Roman Consul, under the Pontificate of John I., converted her palace into a church, which, from its proximity to the porticos of the Olitorium Forum [vegetable market], took the name of S. Maria in Portico.

Near there Celestine III., towards the end of the XIIth century, founded a hospital.

At this epoch the hospital of S. Maria delle Grazie, erected in 1045 by Gregory VI., already existed, between the Church of SS. Guattro and the Lateran. It was destroyed by the followers of Robert Guiscardus, who came to the aid of Gregory VII. against the supporters of Henry IV. in 1084, and Urban II., in 1088, newly erected it at the extremity of the Roman Forum, under the Capitoline hill.

Another hospital subsequently arose near that of the Grazie and the Church of S. Maria della Consolazione, consecrated in 1470. At the beginning of the XVI. century Duke Valentine added a ward for women opposite to that for the men. This ward is that which to-day, more than all the others, requires the aid of the sanitary engineer.

The whole hospital, under the Pontificate of Sixtus IV., was enlarged, and that near it of the Grazie, and the other not far off of S. Maria in Portico, were united to it, thus forming a single institution, larger and more important, which took the triple name already mentioned.

Between 1830 and 1836 the building was much enlarged, and the arrangement of the wards was improved.

Important modifications have recently been made, so as to respond to modern hygienic requirements.

The hospital is set apart for the treatment of accidents in both sexes.

There are also private rooms for paying patients.

A good library is at the disposition of the students.

The average number of in-patients is 150.

THE HOSPITAL OF S. ANTONIO ALL'ESQUILINO:—Piazza di S. Maria Maggiore.

This hospital, for the reception of patients suffering from chronic diseases, up to a few years ago served as the military hospital. To adapt it to this use, notable transformations and additions were made in the ancient structure, which was formerly the monastery of S. Antonio, so that now it is one of the cleanest hospitals in Rome.

The church annexed to the monastery, built in the court of the private basilica of Junius Bassus, Consul in the time of Constantine, has a door-way of the fine Roman style, of the date of 1250.

There is room for 450 beds in the hospital, but it is destined to ulterior changes, because the street which is to connect the Via Farini with Via Napoleone III. will pass through its courtyard.

There is a room for the treatment of urgent cases attached to the hospital.

THE HOSPITAL OF S. GIOVANNI:—Piazza di S. Giovanni in Laterano.

In 1216 Cardinal Giovanni Colonna founded on the Cœlian hill, near the Church of SS. Pietro e Marcellino, an asylum for the pilgrims who were taken ill at the



Lateran when visiting the relics. Later on, through the labours of Cardinal Pietro Colonna, the Society of the *racomandati alla immagine del SS. Salvatore ad sancta sanctorum*, transferred this asylum to the Lateran field, near the two little churches, one dedicated to Sant' Andrea and the other to the Archangel Michael. From this the asylum and the hospital first took the name of S. Andrea e S. Michele.

The Society, which in 1318 had the approval of Pope John XXII., possessed the government of the hospital until the beginning of the present century, and afterwards gave it the name of *SS. Salvatore ad sancta sanctorum*. To-day it is known by the name of San Giovanni.

Pius IX. made an important addition to the hospital, namely, the obstetrical clinic, and a lying-in ward. In this *ospizio di maternita* only married women or widows who were pregnant before the death of their husbands were admitted, when their parish priest testified to their honesty.

This maternity hospice still exists, but without the old restrictions. The part which is called *celato* (concealed) receives those women who do not wish to give their names; it is sufficient if they give it in a sealed envelope.

Opposite the hospital is a cemetery which was opened by Pius VII.; it is now closed.

Notwithstanding that the administrations of later times have endeavoured to improve the establishment with restorations made in a rational way, it still leaves much to be desired by one who judges it from the standpoint of modern hygiene.

It is now destined for the admission of women only, and

there is a laundry and disinfection station in connection with it.

There is an area suitable for new extensions.

The average number of in-patients is 425.

#### THE CLINICA CHIRURGICA :—Via Garibaldi.

This hospital, for the teaching of clinical surgery in connection with the University of Rome, is situated at the foot of the Janiculum, in an airy and pleasant position, and is under the direction of Senator Professor Durante.

Although the building was not originally constructed as a hospital, still, with the alterations which were introduced in forming it into a contagious hospital, and subsequently into the Clinica Chirurgica, it is found to-day in a good hygienic condition.

Towards the end of this year it is probable that the Clinical Chirurgica will be transferred to its new and splendid quarters in the Policlinico. The building will then be used for the reception of the tuberculosis patients belonging to the Santo Spirito Hospital.

It has about 100 beds, but it can hold more if necessary. There is a free dispensary attached.

There are also private rooms for paying patients.

#### THE HOSPITAL OF S. MARIA E DI S. GALLICANO :—Piazza di S. Rufina.

An ancient tradition narrates that, in the time of Gregory VIII. a French leper had been able to collect, by begging, so much money as to establish an asylum for lepers in a tavern outside Porta Angelica, which was called S. Lazzaro.

This hospital was first under the care of the governor

of the Pope's household, and then under the Commendatore of Santo Spirito.

Leprosy having diminished, and tinea and scabies become more common, these diseases were treated there. However, the locality of the hospital of S. Lazzaro being inconvenient, the patients were removed to S. Spirito, where they were gathered in a separate place.

Meanwhile the priest Emilio Lami, rector of the hospital of S. Galla, with the protection of the celebrated physician Monsignor Lancisi, the head physician of Clement XI., in 1722 rented, in Trastevere, a house where he gathered the scabious and tineous children. Benedict XIII. wished to protect this charitable work, and gave it greater impulse, so that in 1724 the building of the present hospital of S. Galliacano was begun, and was completed in 1726.

It admits patients suffering from cutaneous and venereal diseases. Average number of in-patients 172.

THE HOSPITAL OF THE FATE-BENE-FRATELLI, or DI S. GIOV. CALIBITA:—39, Via di S. Bartolomeo all' Isola.

The hospitallers of S. Giovanni di Dio, who in 1571 had obtained of S. Pius V. the church which had belonged to the Benedictine nuns in the Tiberian Island, in 1574, Gregory XIII. being Pope, founded there a hospital which was called S. Giovanni Calibita, or of the Fate-bene-fratelli, on account of the way in which they asked alms —“*fate-bene fratelli per l'amor di Dio.*”

It was enlarged under Clement XI. It had various changes, and now again has come into the hands of the Fate-bene-fratelli, who administer it on their own account.

It is a private hospital for paying patients. There is a

dental dispensary in connection with it, directed by Father Orsenigo.

The clinical school for diseases of the throat, nose, and ear is situated here for the present.

THE HOSPITAL OF THE BAMBIN GESÙ:—In the Convent of S. Onofrio in the Janiculum.

The regulations of the Roman hospitals do not permit of the gratuitous treatment of children under seven years of age.

This lacuna in the hospitalling assistance of the capital was filled up in 1869 by the Duchess Salviati, who, with an impetus of charity truly admirable, laid the foundations of a most useful charitable institution, by instituting a small hospital for young children.

The hospital was first opened at the Zoccolette, near Ponte Sisto, but the building being unsuitable, and the site dreary, it was soon changed.

The institution, helped by the Commune and by many of the Roman ladies, increased to such an extent that they were soon able to remove the hospital to the quiet convent where the poet of Gerusalemme ended his days.

The hospital is now assisted by the Congregation of Charity, which reserves its right to 112 beds. It is not large enough for the requirements of the population.

A free dispensary is attached.

THE HOSPITAL OF S. MARIA IN CAPELLA:—In Trastevere near Ponte Palatino.

Prince Carlo Doria Pamphily, who died in 1856, ordered in his will the foundation of a hospital for poor chronic invalids. His nephew and heir, Prince D. A. Doria Pamphily, instituted this hospice in Trastevere,

where it is remembered there was an asylum for poor patients opened by S. Francesca Romana, who had his house near there.

Annexed to the hospital is the little Church of S. Maria ad Pineam, an excellent work of 1090.

The hospice is capable of holding 100 patients, and only receives ordinary chronic diseases, excluding all ulcerous surgical forms, besides contagious and mental diseases.

He who enters this institution, after having passed through the surrounding streets, cannot fail to admire the order and cleanliness which reign there.

For permission to see the hospital, an application should be made to the Administration of the Casa Doria Pamphily.

#### THE HOSPITAL OF S. ROCCO :—Via di Ripetta:

Towards the year 1500, during the Pontificate of Alexander V., a confraternity was established in Rome, afterwards confirmed by Pius VI., who dedicated a church to SS. Rocco e Martino, with an annexed hospital for the benefit of the poor inhabitants living near Ponte di Ripetta.

In the XVIth century Cardinal Anton Maria Salviati gave some property to the institution on condition that not only men, but also women, should be received in it, especially those near their confinements.

In 1700 a brief of Clement XIV. restricted the admissions to parturient women alone. They were received on presenting themselves, without being asked their names or condition.

This hospital was closed in 1893, it being replaced by the hospital of S. Giovanni and the municipal maternity hospitals.

THE TORLONIA OPHTHALMIC HOSPITAL: Salita di  
S. Onoforio, 50.

This hospital, for the treatment of diseases of the eye, is due to the munificence of the Princes Torlonia.

A free dispensary and a clinic for teaching is attached to it.

THE HOSPITAL OF THE FORNARI O DI S. MARIA DI LORETO:  
—Near the Foro Traiano.

Through the initiative of the College of Bakers, in the jubilee year 1500, the Confraternity of S. Maria di Loreto was founded, and, subsequently, with the alms of the brothers and other charitable persons, the church near Trajan's Forum was erected on the designs of the architect Antonio Sangallo, and near to the church a hospital for the reception of poor bakers who were ill was also established.

The charitable institution is called *Pio sodalizio dei fornari italiani*.

THE HOSPITAL FOR YOUNG CHEMISTS OR OF S. LORENZO IN  
MIRANDA: —Near the Church of SS. Cosma e Damiano—Via  
Salaria Vecchia, 29.

Martin V., in 1429, suppressed the college church of *S. Lorenzo in Miranda*, giving the church, with its income, to the University of Apothecaries, so that they should found a hospital there.

The hospital is now closed, but the Chemico-pharmaceutical College still exists. This ancient charitable institution is now being transformed.

THE JEWISH HOSPITAL: 21, Piazza S. Bartolomeo all' Isola.

This hospital receives Jewish patients suffering from all diseases, excepting the contagious forms.

## THE MILITARY HOSPITAL ON THE CÆLIUS.

This is a splendid modern building, completed in 1891. It consists of 27 blocks, isolated from one another, and intercalated by roads and gardens. Eight blocks are for the reception of patients suffering from ordinary diseases, three for contagious diseases, one for sick officers, and the remainder for the various services of the hospital.

A grand iron gallery, in two floors, 150 metres long, unites together almost all the blocks of the hospital.

The eight pavilions for ordinary diseases are all equal in size, and consist of an underground floor partly above the level of the ground, and two stories above this.

A small tower with a square base, destined for the latrines, arises near the pavilion and communicates with it by means of an iron gallery enclosed with glass.

The floors are impermeable, the ceilings without corners.

Each ward has convenient arrangements for heating and ventilation. It is lighted with gas, and there is a double water supply—Marcia and Felice.

A small railway serves for the transport of food from the kitchen to the pavilions. There are 500 beds in the hospital.

Although specialists do not consider this hospital perfect, still it is one of the finest monuments that has been raised for the benefit of suffering humanity, and up to now even the best, in Italy.

## THE MILITARY HOSPITAL OF S. CROCE IN GERUSALEMME :—

## Piazza di S. Croce in Gerusalemme.

It is situated in a convent annexed to the church of this name, and serves as a dependence for the military



hospital on the Coelius. In the *locale* great improvements have been made, so that it to-day is a hospital in good hygienic condition.

THE SPANISH HOSPITAL (the Hospital di S. Giacomo e S. Maria in Monserrato):—Via Giulia, 151.

This hospital was founded by two charitable ladies of Barcelona—Giaccoma Fernandez and Margherita di Majorca, in 1350, under the Pontificate of Clement VI. It had for its scope not only the lodging of pilgrims, but also the reception of the sick subjects of the King of Aragon. Charles V. gave an income of 500 ducats to this institution, and afterwards additional legacies were given.

Another hospital for Spaniards was founded in the jubilee year 1400, under Nicholas V., by Don Alfonso De Paradinas, Bishop of Rodrigo, in Spain.

The two institutions were afterwards united into one, which was subsequently suitably enlarged and restored.

THE GERMAN HOSPITAL:—Via di Monto Tarpeo, 26.

This hospital is for the reception of German subjects.

### THE POLICLINICO UMBERTO I.

This is a magnificent building, destined for the reception of all special diseases, with a view to the clinical instruction of students who have adopted a medical career.

It is situated in a large area outside the Aurelian walls, between the Porta Pia and the Porta di S. Lorenzo. The Eleventh International Medical Congress was held here in 1892.

Its completion has been much delayed owing to want

of funds, but it is confidently expected that it will be ready for the reception of patients and for clinical teaching in a year or two.

This institution has not, perhaps, its equal in the world, for its richness and magnificence of construction.

#### THE MANICOMIO.

THE HOSPITAL OF S. MARIA DELLA PIETÀ:—Via della Lungara.

In the XVIth century, lunatics, regarded with superstitious mysticism, were made fun of by the common people, who, in the public streets, derided and insulted them.

Three noble Spaniards, whose names should never be forgotten, the priest, Ferdinand Ruiz, of Seville, and Diego and Angelo Bruno, wishing to put an end to this cruelty, in the year 1548 collected insane persons of both sexes, at first in some rooms next the Church of S. Catarina dei Funari, of which Ruiz was chaplain, and afterwards in a house near the Piazza Colonna, thus forming the basis of one of the grandest humanitarian works, the Manicomio of Rome.

In this enterprising design Ruiz had as powerful auxiliaries St. Charles Boromeo and St. Philip Neri. In 1564 Pius IV., by a special bull, dated December 11, approved of the new institution, under the title of the "Confraternity of Santa Maria della Pietà."

Up to the year 1563, however, the establishment of medical treatment for the poor lunatics had not been thought of, and in that year the form of treatment was truly a mockery, judging it from our present standpoint, as it was ordered without technical knowledge, and solely guided by Christian charity,

In 1635, Cardinal Francesco Barberini, nephew of Urban VIII., protector of the hospital, initiated a kind of progress by making certain administrative and disciplinary rules, leaving, however, the treatment of the patients to be made with chains, the straw room,\* and the whip of the master of the lunatics. The rules, however, warn the master that he is only to beat the patients with the whip when they are violent or disobedient, and that he must use it more to frighten them than to use it effectively. Instructions are also given that the chains and the straw room should be used with charity and discretion.

Besides the master, a paid physician was appointed, whose duties were very secondary. He had to visit the patients each time it was necessary, and he also had to visit the new patients on their entrance to order the necessary purgatives.

Benedict XII. had constructed in connection with the hospital of S. Spirito two separate divisions, one for men, the other for women, and the patients were removed there in 1726. Then the institution contained only 158 patients.

About this time the influence of the physicians began to prevail, and in 1788 a rational treatment was established for these unhappy beings. Dr. G. Flaiani, chief physician of Pius VI., was a great supporter of reform.

In 1844 the nomination of an inspector to the Manicomio, in the person of a doctor of medicine, was decreed, who was to reside in the hospital, and six years later the first true technical direction was constituted.

---

\* This room corresponds to the padded room of the lunatic asylums of the present time.—TRANSLATOR.

About a century ago, the establishment was transported to its present position in the Via della Lungara, and in 1863, by the desire of Pius IX., the Villa Barberini was added. Five years later the Villa Gabrielli also formed part of the institution, and since that time the various administrative bodies which have governed it have added such improvements as to make the new portion one of the finest and best organized lunatic asylums in Europe.

Within the next few months a great transformation will take place in the old portion of the institution by the Tiber, as it will have to be demolished for the completion of the embankment.

#### RULES FOR THE RÉGIME OF THE BOARDERS.

Besides the ordinary class, there are three classes of boarders of both sexes, and a special class.

The charge is 250 francs per month for the first class, and 180 francs for the second.

The third class is divided into two sections—one with a dormitory in common, and the other with separate bedrooms. The payment of the first is 110 francs, and that of the second 130 francs. That of the special class is 500 francs.

The boarders of the first and second class reside in separate villas, with recreation, billiard, reading, and music rooms, and with separate gardens, and a carriage for drives in the city and the country on certain days.

The expense of washing the personal linen, mending, purchase of books, papers, etc., is paid by the family. A deposit of 50 francs, placed in the hands of the collector for such expenses, is compulsory, besides the quarterly payment of the account.

The boarder must be provided with a suitable wardrobe of personal linen and clothes.

The admission of boarders is only conceded when the legal prescriptions are carried out by filling in the legal request, a copy of which is given below.

On the presentation of the demand, a sum corresponding to two months' board must be paid to the collector of the institution.

When it concerns patients depending, by the nature of their office, on public administrations, the simple request of the latter, which also guarantees the regular payment of the pension, will be sufficient, and in these cases also the obligatory payment of the pension in advance is not necessary, only the deposit of 50 francs must be paid.

TO THE HONOURABLE DEPUTY ADMINISTRATOR OF THE  
MANICOMIO OF ROME.

I the here undersigned (*a*)  
resident in (*b*) request that  
the patient (*c*)  
be maintained and treated at my expense in class (*d*)  
according to the rules and regulations in force in the Institution,  
to which I intend fully to conform.

(Date)

(Signature).

(*a*) Surname and Christian name.

(*b*) When the residence is outside Rome it will be necessary to select the residence in Rome at a notarial office, adding at the end of the request the following declaration:—For all purposes in connection with this business I select my residence at the office of the notary Signor . . . .

(*c*) Surname and Christian name and relationship (if any) existing.

(*d*) Indicating the class and special treatment (if it be desired), according to Art. 1 of the present regulations.

## MATERNITY HOSPITALS.

ASDRUBALI—SAVETTI—PANUNZI.

The institution of maternity hospitals is for the sole purpose of assisting and protecting in their confinements those poor women who, wanting the necessary means for providing their urgent requirements, could not, without grave physical damage, material and moral, be left without aid.

They were instituted by the Commune in 1886. In 1890 they were legally transferred to the Congregation of Charity, by whom they are still administered.

All women of poor condition, who present themselves at the doors for admission, are received, provided that they are at the end of nine months of pregnancy, or parturition or abortion is imminent. Their residence in the establishment, excepting in extraordinary cases, cannot be less than ten days, and not more than fifteen.

These institutions are a true providence, and are economically worked. They have advantageously substituted the old maternity asylum of S. Rocco, closed in 1893.

SALA ASDRUBALI :—Via Ferraccio near Piazza Vittorio Emanuele.

Director, Dr. Bompiani. The *locale* is in excellent condition.

SALA SAVETTI :—130 Via San Francesco a Ripa.

Director, Dr. Piccini. The *locale* is in fair condition.

SALA PANUNZI :—Via Arco dei Banchi (Castel S. Angelo).

Director, Dr. Piccirilli. The *locale* is in fair condition.

THE TRASTEVERE DISPENSARY FOR CHILDREN :—25, Vicolo della Scarpetta.

In 1894 the praiseworthy society, "Soccorso e Lavoro,"

gave life to this dispensary, where they treat sick children, also giving them food if necessary—frequently the best of drugs.

In surgical cases those operations only are performed which can be suitably done in a simple dispensary.

THE ESQUILINE DISPENSARY FOR CHILDREN :—51 Via Galilei.

This dispensary is supported by the charitable public, and sustained by the disinterested interest of the attendant physicians.

Medical and surgical cases are treated there.

#### OPHTHALMIC DISPENSARIES.

These dispensaries, which are open every day, are maintained by the philanthropy of the medical staff. The Congregation of Charity furnishes a small subsidy for the furnishing of the *locale* and for drugs. They are as follows :—

The Ophthalmic Dispensary, directed by Dr. F. Scellingo, 7 Via del Borchetta.

The Ophthalmic Dispensary, directed by Dr. D'Antone, ex-convent of the Maddalena.

The Ophthalmic Dispensary, directed by Professor Parisotti, Vicolo de' Riari, letter D.

THE GOVERNMENT CONTAGIOUS DISPENSARIES FOR BOTH SEXES :—Vicolo del Divino Amore, 22—Via Aureliana, 35—Via Paola, 46—Via Tor de' Specchi, 29—Via dei Gracchi.

These dispensaries are open to the public from 12 a.m. to 2 p.m. ; on Mondays, Thursdays and Fridays the women are treated ; and the men on Tuesdays, Thursdays and Saturdays.

Medicines are gratuitously given to the poor.



## ANTIRABIC INSTITUTE :—Via Palermo.

This institute was established in 1891 in connection with the Institute of Experimental Hygiene of the Royal University, under the honorary directorship of Professor Celli. Persons who have been bitten by rabid animals are treated there according to Pasteur's method.

## ESTABLISHMENT FOR ZÖOTHERMIC BATHS AND THE DISPENSARY FOR BLOOD AT THE MATTATOIO.

In connection with the great Mattatoio at Testaccio, with a separate entrance in the Via Franklin, is the establishment for the treatment by zöothermic baths and the dispensing of blood. It is, perhaps, the finest establishment of the kind in Europe.

The principal room, where the blood is distributed, has a large marble table in the centre. In the middle of the table are three suitable recipients heated with gas. The central one serves to maintain the defibrinated blood at a normal temperature, in nickel vessels; the other two recipients are used for heating and sterilizing the vessels in which the extracted blood is collected directly the animal is killed.

Along one of the walls of the room are ten porcelain basins with water taps, for the use of those patients who wish to rinse their mouths after drinking the blood.

The pavement is of asphalt; the walls are cemented, and lined with large slabs of bardiglio marble.

The blood is generally administered defibrinated, and is not given until the veterinarian examines the interior of the animal to see that it is healthy.

A drink in the common room costs 15 centimes; in the reserved room 50 centimes.

The part allotted to the zöothermic baths is also admirably arranged. There are numerous little rooms furnished with suitable bathing tubs and all the necessary requirements.

Affections of the joints caused by injuries or chronic rheumatism are for the most part treated there.

SUBSCRIPTION FOR 10 BATHS:—1st Class, 26·0 francs ; 2nd Class, 13·50 francs ; 3rd Class, 6·50 francs.

The treatment is gratuitous to the poor.

#### PRIVATE HOSPITALS AND NURSING INSTITUTIONS.

THE ENGLISH NURSING SISTERS:—45, Via Castelfidardo.

The Little Company of Mary, or English nursing sisters, receive patients suffering from non-infectious diseases at their Home. Patients can be attended there by their own doctors. The sisters also nurse the sick at their homes, or in the hotels and pensions. The charges for nursing vary according to the position of the patients.

ST. PAUL'S HOME —Via Palestro, 62.

This is an American institution, where they receive non-infectious cases. The charge is 25 to 35 francs a day, without medicine or medical attendance. The patients are allowed to be attended by their own doctors. This institution also supplies nurses for the sick at their own homes. [This Home is now being re-organised, and at present does not receive patients.]

#### BRIEF NOTES CONCERNING THE HOSPITALS.

The considerable number of hospitals that we have described would make the reader believe that the capital of the kingdom was well supplied with these valuable institutions.

But, unfortunately, it is not so. The public hospitals of Rome can receive only 2,000 patients. This number is altogether beneath the requirements of the city, as is seen by the difficulties encountered when one is desirous of obtaining admission for a patient who is not very gravely ill. One will also readily admit it when he thinks that Turin has room in its hospitals for 2,500 in-patients, and Milan for 3,150, and, it is well known that Rome has a population greater than Turin, and nearly as large as that of Milan. Besides, there is a greater proportionate number of poor in Rome than in other cities in Italy.

In order to obtain the number of beds above indicated in the Roman hospitals, it is necessary to crowd them together, and often place them in double rows, thus greatly lessening the proper amount of cubic space for each patient.

But this is not the worst. It begins when one examines the financial state of our institutions.

Commendatore Silvestrelli, the Royal Trustee of the hospitals, who has devoted both time and ability to them, in an able and exact report has stated that the yearly deficiency of income is 874,833'61 francs.

That is to say, in round numbers, the Roman hospitals would need, to be self-supporting, a sum of *twenty millions* of francs.

This poverty of the Roman hospitals depends on the exceptional conditions in which the city has been found since 1870. From that year up to the present time the population has doubled, and the new comers who have poured into the capital of the kingdom, for reasons which are readily understood, have given a higher ratio of disease than the ordinary population.

The patrimonial incomes of the hospitals have not increased in equal measure, which, as is known, accumulate in the course of centuries through public and private beneficence, and are always in relation with the wealth of the population.

The State and the Municipality, although troubled with a grave economical crisis, endeavour every year to fill up the deficit with about a million francs, charged now to one, at another time to some other balance. It is to be hoped that, after a period of repose, the active forces of the city will renew their vigour, and then the inhabitants, favoured by fortune, will be able to co-operate more largely in relieving the sufferings of those who have to leave their own homes to receive treatment in a charitable institution.

## CHAPTER IX.

## CHARITABLE INSTITUTIONS AND SANITARY PROVISIONS.

## THE ASYLUM FOR OLD PEOPLE AT S. COSIMATO.

A LITTLE time back there existed in Rome two asylums for the aged, one at S. Gregorio for old women, and the other at S. Cosimato for old men.

These asylums are now administered by the Congregation of Charity, which gave energetic impulse to a series of reforms, already initiated by the municipal authorities, and was thus enabled to systematise them in a way satisfactory to the decorum of the city and to modern requirements.

The assiduous labours of the late Professor A. Ceccarelli were of notable assistance in transforming these institutions, and, in overcoming the resistance which was opposed to reforms, the Professor made use of his influence with the Supreme Pontiff, whose esteemed and beloved physician he was.

Now, both sexes are united in the great *locale* of S. Cosimato, where important alterations were made, which, besides improving the sanitary condition of the institution, placed in greater evidence the artistic merits of the building, whose square portico, with most graceful little columns, is a work in a thousand.

Within the establishment workshops were subsequently organised, where the inmates who are capable of doing some work can be occupied, with great satisfaction to

themselves, and with notable moral and economic advantages.

The medical care of the hospital is entrusted to a paid doctor, who visits the patients daily in both infirmaries. When the patients are very ill they are taken to one of the general hospitals, if they can be removed without danger.

To be admitted into the institution, the applicants must give evidence that their age prevents them making a living, and that they have no relatives who are legally obliged to support them.

The administration makes thorough inquiries into the antecedents of the applicants.

#### THE AGRICULTURAL COLONY AT S. GREGORIO.

As workshops for the artisan portion of the aged were instituted in the asylum of S. Cosimato, so very opportunely the Congregation of Charity thought of forming a useful occupation for those of the inmates who were accustomed to an agricultural life, or for those who, through their condition of health, required to be much in the open air.

With this object, the Congregation of Charity, early in 1892, obtained from the Commune the vineyard formerly belonging to the monastery of S. Gregorio, which has a superficies of 27,000 square metres, and enjoys a splendid position, in respect to sunshine, on a gentle declivity.

In this vineyard, provided with abundance of water, various kinds of vegetables are cultivated; a rich rabbit warren has been established, and Swiss cows placed, so that the Asylum of S. Cosimato obtains from its land the

best alimentary products, with no despicable economic advantage.

#### THE ASYLUM MARGHERITA DI SAVOIA FOR THE BLIND.

The Princess of Piedmont, now the Queen of Italy, in June, 1873, nominated a committee of twelve persons to draw up regulations for the foundation of this hospice.

The committee, having completed its programme, held some meetings at the Quirinal Palace, under the presidency of Her Royal Highness. A sum of about 70,000 francs was collected, and the committee applied to the municipal authorities for a suitable *locale* and a subscription.

The Communal administration conceded them the Convent of S. Maria degli Angeli, at the baths of Diocletian.

After the necessary alterations were made, the institution was opened on May 5, 1875.

Adult persons are admitted, and there is a school for children.

#### INSTITUTE OF S. ALESSIO ALL' AVENTINO FOR THE BLIND.

This institution, that the munificence of the Marquis Alessandro Capranica has built on the summit of the Aventine, is destined for the reception of the blind of both sexes.

The edifice is large and spacious, and if the poor inmates cannot enjoy the panorama, they breathe the air perfumed with orange blossoms and the eucalyptus, with which their garden is well stocked.

Their principal occupation is music.

#### THE ASYLUM FOR THE CRIPPLED.

This institution was opened in 1886 through the initia-



tive of some very influential people, and was presided over with paternal care up to 1895 by Comm. Carlo Voghera. In that year it passed into the hands of the Congregation of Charity.

#### ARMS AND LEGS.

A very useful society, under the quaint title of "Arms and Legs," was established in Rome in 1879 by the late General H. H. Maxwell, for the purpose of providing the Beaufort artificial limbs for poor persons whose limbs have been amputated in the Roman hospitals. Since General Maxwell's death the society has been kept going by the very laudable exertions of three English ladies—Miss Vansittart, Miss Bulwer, and Miss Dora Bulwer, to whom applications for limbs should be made.

#### THE DEAF AND DUMB INSTITUTE.

This institution, for the education of children deprived of hearing, was founded by Gregory XVI. in 1841.

It was situated, up to a few years back, in the Piazza delle Terme; and was then transferred to its present position in a large airy palace outside the Porta Pia.

Demands for admission for persons living in the Province of Rome should be directed to the Prefect.

Requests for the admission of persons who are desirous of paying (1'30 francs per day) should be made to the President of the Council of Vigilance. A person who resides in Rome and is known as solvent by the administration must guarantee the payment of the applicant, or the deposit of a *cartella di rendita consolidata* corresponding to a quarter's pension must be made.

## MARINE ASYLUM.

In the year 1867 a committee initiated the institution of a marine asylum for Rome. After long and patient labour, on May 27, 1877, this charitable institution was by decree constituted a *corpo morale*. A new statute was drawn up, and obtained the Royal decree on August 12, 1877. It was established that the directive council should be composed as follows:—A fourth by the Communal Council of Rome, a fourth by the Provincial Council, and half by the General Council of the institution, composed of members of the promoting committee or new members.

Up to 1870 it was supported by voluntary contributions and the proceeds from charitable feasts. In 1871 the municipal authorities aided the work, and since 1872 the provincial authorities have united with the Commune.

In 1881 the Villa Albano at Anzio was acquired, and now the Marine Hospital is established there.

Every year over 700 children are under the care of the institution.

Offices, 33, Via S. Chiara ; from 4 to 6 p.m.

President, Professor Toscani.

## THE BREFOTROFIO.

The Brefotrofio of Rome was founded by Innocent III., who became Pope in 1198. It is, therefore, older than that of Paris, which dates from 1638, and the London Foundling Hospital, which was built in the last century. From the beginning the Brefotrofio was annexed to the hospital of S. Spirito. Near the entrance of the hospital was a window, which, in a little cell, contained a small bed capable of holding an infant. The newly-born

baby was secretly deposited in the *wheel* (*ruota*), which, by its movement, rang a bell and thus gave notice that an infant had been placed there. The child was immediately removed and taken to the doctor of the hospital. All the infants, however, were not placed in the *wheel*, as some were directly consigned at the door of the Brefotrofio, where, on request, a receipt was given.

The wheel soon was abolished, and the exposed were taken by the midwives to the Office of Civil State, where the child was named, and it was then taken to the hospital. At first all had the name of *Progetti*.

As soon as the infant is received at the Brefotrofio, if it be healthy it is immediately sent into the Campagna to be wet-nursed, but if it be ill it is placed under treatment in a suitable ward.

Legitimate infants are also received if their parents are too poor to support them.

The legitimate, after a year, are returned to their parents, but the illegitimate are retained until they are capable of working for themselves, or have been adopted.

#### WET-NURSES.

The Congregation of Charity gives a subsidy for wet-nursing, with the intention of helping those poor women who are incapable of suckling their infants, and are obliged to confide them to paid nurses. The wages of the wet-nurse usually do not exceed 10 francs a month for the whole period of nursing, which is usually 10 or 12 months.

#### VACCINATION.

The following rules are in force :—

1. All children are obliged to be vaccinated within six

months of their birth, excepting those who have in the meantime suffered from small-pox, or are suffering from some disease which would render the operation dangerous.

2. Children who, through constant illness, have not been vaccinated during the first year of life, must be vaccinated at least within the second year.

3. Those children who have been vaccinated for the first time without favourable result, must be vaccinated a second time at least in the following year.

4. Beyond the period of age mentioned, vaccination must be repeated in the same individual every time that, through special conditions of the danger of the spread of small-pox, it is considered necessary by the sanitary authorities.

5. No child can be admitted to public or private schools, official examinations, educational or charitable institutions, workshops, offices, or factories of every kind, if, having passed the eleventh year of age, he does not present an authentic certificate from the Communal authority of having undergone a vaccination not earlier than his eighth year.

6. All the vaccinated must be presented to the vaccinator from the seventh to the tenth day of vaccination, and all the vaccinations performed, and their results, whether by public vaccinators or private practitioners, must be communicated by the vaccinator to the municipal sanitary office for the necessary registration.

For the performance of these regulations, two ordinary sessions of public gratuitous vaccination are held in Rome, one from April 1 to June 30, and the other from September 1 to November 30, in which periods the municipal rooms in the ex-convent of the Crociferi are open to the

public from 10 to 12 a.m., and at the same hours on Thursdays and Sundays of the other months of the year.

Extraordinary sessions are held each time it is considered necessary for the more exact execution of the law, or if, through the appearance of some cases of small-pox in the Commune, there be danger of the spread of the disease.

The certificates of vaccination or re-vaccination are gratuitously obtained at the Sanitary Office in the Campidoglio, under the *portico* of the Vignola.

The Commune furnishes animal vaccine lymph at the request of a medical practitioner, or the head of a family, on payment of the cost of production.

For this purpose a vaccination institute has been erected near the Communal *mattatoio*.

#### PUBLIC DORMITORIES.

The public dormitories, which were instituted in 1873, were placed under the control of the Office of Hygiene in 1884. Since 1890 they have been under the jurisdiction of the Congregation of Charity.

The old dormitory in Via dei Bastioni was closed in 1893, when the new one, constructed by the Commune at a cost of more than 200,000 francs, was opened at the Vicolo del Falco, in Borgo, near the Piazza di S. Pietro.

This building corresponds to the necessities of a large city, and to moral and hygienic requirements.

There are separate beds for 170 men, 26 women, and 11 children under 8 years of age.

The same person cannot sleep there more than three consecutive nights. In special cases, however, the

direction have the power of extending the time to three nights more.

The males, directly they have entered the dormitory, must undress, to have their clothes disinfected.

Each individual has a douche bath at a reasonable temperature. After that he is dried and gets a pair of clogs, a dressing-gown, one or two coverlets, and goes to the bed assigned him. It is gratuitous.

#### OTHER DORMITORIES.

There is a free one in the Via Flaminia, under the care of the Casa Sonzogo. The dormitory at Santa Maria in Cappella, and that at Mantellate, near the Lungara, are supported by the Circolo di S. Pietro; there is a charge of a penny per night.

#### LAZZARETTOS AND QUARANTINE HOUSES.

In prevision of the possible invasion of a contagious disease, the erection of a large lazzaretto was provided in 1883. It is situated on the Aventine hill, in an isolated spot in the midst of an extensive site, which permits of the erection of additional buildings in case of necessity. The present buildings are capable of receiving 450 patients.

Another small lazzaretto was prepared outside the Porta Maggiore in 1884.

In the same year two small lazzarettos were instituted, one in the ex-convent of S. Pancrazio in the Janiculum, the other in that of S. Giovanni, in the Via Lungara, the first having 150 beds and the second 50.

Another lazzaretto was fitted up by Leo XIII. at Santa Marta, near the sacristy of St. Peter's.

## THE DISINFECTIÖN SERVICE.

MUNICIPAL OFFICE :—Piazza della Pilotta.

In consequence of the great importance that disinfection has in impeding the diffusion of infectious diseases, the Commune of Rome has provided a disinfecting station on an isolated and convenient position at Santa Sabina.

The establishment is provided with suitable apparatus for the sterilization of germs by means of heat, and also with chemical means. They use the Géneste apparatus, besides pumps and vessels for irrigation and immersion.

A competent staff here thoroughly performs its duties, and owing to the arrangement of the buildings and the disinfecting stoves, there is no possibility of the infected materials—bedding, etc.—coming into contact with the disinfected ones.

The special regulations which came into force March 16, 1894, we here give in full, owing to the great importance of the subject.

SPECIAL REGULATIONS FOR PREVENTING THE  
DIFFUSION OF THE INFECTIVE AND CONTAGIOUS  
DISEASES OF MAN.

Article 1.—The physicians, surgeons and midwives who attend or assist cases of small-pox, anthrax, measles, scarlatina, typhoid fever, typhus fever, diphtheria, croup, whooping cough, puerperal fever, cholera, dysentery, and other diffusive diseases, or suspected of being diffused, or cases of hydrophobia, or syphilis transmitted by infected wet nurses, are obliged to give immediate notice of them in writing to the Municipal Office of Hygiene, either directly, or by



means of the district offices or the nocturnal pharmacies, retaining an analogous certificate.

Article 2.—It is equally obligatory for the medical attendant to report cases of tuberculosis which occur in educational institutions, colleges, hospitals, and asylums; and those cases of tuberculosis followed by death, wherever they are manifested, to enable the Office of Hygiene to perform the necessary disinfections for the protection of the public health.

Article 3.—When the medical attendants are exonerated from reporting cases of tuberculosis they ought to adopt, in the place of the Office of Hygiene, all the rules of disinfection contained in the present regulations.

For midwives the provision of Article 6 of the special regulations for obstetrical practice remains in force. (Royal Decree, February 23, 1890.)\*

---

\* ART. VI.—The midwife who is attending a woman suffering from an infective puerperal process, must abstain from professional practice for at least five days where it is possible to provide other obstetric service.

In any case the midwife must not approach another pregnant, parturient, or puerperal woman without having written authority from the municipal sanitary officer, who will ascertain that she has been first subjected to accurate and efficacious disinfection, according to the instructions given in the annexed regulations.

The contravention of these prescriptions is punished with a pecuniary fine up to 500 francs, and with six months' imprisonment, according to the words of Article 50 of the law for the guardianship of hygiene and public health.

Article 4.—*The announcement is made according to the following form :—*

FORM FOR THE NOTIFICATION OF INFECTIOUS DISEASES.

To be retained.	{	Name, age of the patient
		Residence
		Nature of the disease
		Date of announcement
		Signature of the Receiver

---

NOTIFICATION.

	The	189
To the Syndic.	{	Name, age of the patient
		Residence
		Nature of the disease
		Observations
		Prophylactic measures adopted by the doctor
		(a) Isolation
		(b) Disinfection
		If the intervention of the officer be required
		Signature of the Doctor

---

NOTIFICATION.

	The	189
To the Sanitary Officer.	{	Name, age of the patient
		Residence
		Observations
		Prophylactic measures adopted by the doctor
		(a) Isolation
		(b) Disinfection
		Signature of the Doctor

## NOTICES.

1. The two copies of the notification, prescribed by Article 45 of the Sanitary Law, are to be consigned, united, to the Communal Office of Hygiene, or to a regional or nocturnal pharmacy, or, in case of urgency, to a municipal guard. In all cases the physician-surgeon shall require the signature of the consigner on the matrix, which he must preserve.

2. The *notification* shall indicate whether the diagnosis is positive or only presumptive, or if it only deals with a suspicion. The name of the disease, which must be notified, can be substituted by the number of the countersign.

3. The *observations* include all that which the physician-surgeon will judge opportune to inform the office in the interests of public health—source, cause of the disease, etc., etc.

4. For the *prophylactic measures adopted by the doctor* the office reserves to itself the right of control.

5. The physician-surgeon shall indicate *whether the intervention of the office* for the application of the said measures *be required*, in whatever case he believes it necessary and safe, or there be an impossibility on his part, through the conditions of the family, to directly apply them.

6. Tuberculosis shall be notified—

(a) in all cases followed by death, or when the patient definitely leaves his habitation ;

(b) when it is manifested in schools, colleges, asylums, or other institutions where persons are gathered together.

7. The office will send the forms, on request, to physician-surgeons.

---

Article 5.—The prophylactic rules indicated in the present regulations are obligatory in Asiatic cholera, small-pox, diphtheria, scarlatina, typhoid fever, puerperal fever, and tuberculosis in the cases referred to in Article 2.

They are strongly recommended, and in some cases may be rendered obligatory, by the Communal Sanitary

Authority, in typhoid fever, measles, dysentery, whooping cough, croup and mumps.

Article 6.—Every medical attendant who has patients under his care suffering from one of the diseases indicated in Article 1, is under the guidance of the Health Officer or his deputies, as far as concerns the prevention of the diffusion of the disease.

Article 7.—The Health Officer, either directly or through one of his deputies, shall see that all the prophylactic measures ordered are performed on the part of the medical attendant, his assistants, and the patients themselves.

Article 8.—The medical attendant shall provide, according to the regulations of the Health Officer, for the isolation of the patients, especially when they are suffering from exotic diseases, readily diffusible, like cholera, small-pox, etc., in such a way that the patients can have contact only with those persons strictly necessary to assist them. In special cases the Health Officer can order the patient's residence to be guarded, being able also to extend such a prophylactic measure to all those persons who have had contact with him.

Article 9.—The requirements of Article 5 remaining fixed, when suitable isolation cannot be obtained for a patient suffering from a contagious and diffusive disease in his home, he shall be removed in a suitable carriage to the hospital for infectious diseases (lazzaretto). That is, when he is suffering from an exotic disease, or even an endemic malady threatening pandemic development; in all other cases the patient shall be taken to the isolation wards of the ordinary hospitals.

Article 10.—In the patient's bed-room a basin con-

taining an acid solution of corrosive sublimate, 1 in 1,000 (sublimate 1, acid hydrochloric 5, water 1,000), coloured with blue or green aniline, shall be kept. The persons assisting shall wash their hands in it each time that they have touched the patient himself, or the soiled linen.

Article 11.—The discharges from the respiratory passages shall be received in a spitting-cup, easily washable, containing a 5 per cent. solution of carbolic acid, or absorbent substances, such as peat, sawdust, caustic lime, which shall be daily burnt.

Article 12.—In the vessel for receiving vomits and alvine discharges some milk of lime, 20 per cent., or the 5 per cent. solution of carbolic acid, shall be added, and shall be emptied into the latrine, which, in its turn, shall be regularly disinfected with a solution of chloride of lime for every emission of excremental matter.

Article 13.—The articles of the table—plates, glasses, covers, etc., shall be boiled for half an hour in water containing 2 per cent. of caustic soda.

Article 14.—Remedial objects, if they be of little value, shall be burnt, otherwise they shall be remitted to the municipal disinfecting station to be sterilized.

Article 15.—During the disease all the linen shall be subjected, in the bedroom of the patient, to a first disinfection, immersing it in a wooden or earthenware vessel containing a neutral solution of corrosive sublimate, 1 in 1,000, and leaving it there for an hour at least. It shall then be wrapped up in cloths bathed in the same solution, and kept in a place apart until it is taken to the municipal disinfecting station.

Article 16.—It is forbidden to wash such linen in public or private laundries.

Article 17.—The doctors and midwives, at each visit paid to a person affected with an infective or contagious malady, are obliged to provide for the regular disinfection of their persons and their clothes.

Article 18.—A case of small-pox having been verified, all the persons living with the patient who have not undergone vaccination shall be immediately vaccinated. In all cases the re-vaccination of those who were vaccinated more than eight years before is warmly recommended.

Article 19.—Each time that an individual has been bitten by a dog suspected of being hydrophobic, the dog shall be immediately killed, or, at the request of the owner, and at his expense, it shall be held under observation in the municipal stables, or in another isolated locality, under the charge of a veterinary surgeon, until every doubt be completely removed. If the dog has been killed, the Office of Hygiene shall take care that the head and the medulla oblongata be sent to the Antirabic Institute for ascertaining the existence or not of the disease. Whenever the results show that the dog was mad, or that there is a strong suspicion, the bitten person should be advised to undergo the Pasteur treatment in the municipal Antirabic Institute.

Article 20.—Patients suffering from contagious diseases shall be kept isolated, not only up to the complete cessation of the morbid phenomena relative to the disease, but also in the period of convalescence for the duration of eight days or more, according to the cases.

Concerning children, whatever may have been the infectious diseases from which they suffered, they shall not be re-admitted to the schools without the favourable

opinion of the school medical inspector and the medical attendant.

Article 21.—The isolation of those persons who have had contact with patients suffering from contagious and diffusive maladies, shall continue during all the space of time that is necessary for the presumed period of incubation to have completely elapsed.

Article 22.—For all convalescents, and all those who have had contact with them, before being set free to mix with the public, it is well that they should have a general bath, and that their clothes should be previously sterilized before wearing them.

Article 23.—The disinfections, both in the houses of the patients and in the Communal establishment, are performed under the direction of the Office of Hygiene ; they are charged for to well-to-do families ; they are gratuitous for the poor treated in the hospitals, and for those admitted to medical assistance by the Congregation of Charity.

Article 24.—The disinfections are performed by the municipal agents, according to the quality of the objects, either in the domicile itself of the patients, or in the disinfecting station.

Article 25.—During the course of one of the infective and contagious maladies indicated in Article 1 of the present regulations, the municipal agents shall look after the removal of all the linen infected in the patient's house, and shall take it to the disinfecting establishment to have it washed and sterilized, and shall then return it.

Article 26.—The removal of the linen in single cases shall be effected either daily or every other day, or even at a longer period, according to the instructions given by the health officer.



Article 27. —When the patient leaves his habitation, being cured, or transported to another locality, or through death, the municipal Office of Hygiene shall proceed to the disinfection, by means of the sterilizer, of the infected surroundings, or those suspected of being so.

Article 28. —The disinfection of the walls and the furniture of the room—the hangings having been previously removed—shall be made with the spray sterilizer containing a neutral solution of corrosive sublimate, 2 in 1,000.

Article 29. —The floors and wooden furniture shall be washed with the acid solution of corrosive sublimate, rubbing them well in every part, and especially in the angles and flutings, the first at 4 and the second at 2 in 1,000.

Article 30. —School *matériel*, if of little value, shall be burnt, otherwise it shall be dipped in a 5 per cent. solution of carbolic acid. The papers which cannot be destroyed, or that cannot be disinfected in the steam apparatus, shall be exposed for several hours to the direct rays of the sun.

Article 31. —When special circumstances require the disinfection of objects of art, such as paintings, engravings, etc., which cannot be subjected to the various methods of disinfection already indicated, the Office of Hygiene shall provide for each case, using the greatest caution.

Article 32. —Furniture and other objects in metal, instead of being washed with the corrosive sublimate solution, shall be washed with the 5 per cent. solution of carbolic acid.

Article 33. —The mattresses, palliasses, all the furniture of the bed, the linen, clothings, hanging, carpets, and other

things found in the infected surroundings or susceptible of being so, which cannot be disinfected *in situ*, shall be carried in special carts to the disinfecting station.

Article 34.—The bed effects, clothes, hangings, carpets, bed-curtains, and all objects which would be destroyed by washing, shall be directly disinfected and sterilized. All the linen shall be washed, with the cases of the palliasses. The mattresses, if they be stained with excrement, blood, etc., before being passed into the sterilizer shall be washed.

Article 35. —Straw, rags, and similar objects of little value, shall be burnt in the crematorium furnace, and all that which cannot be washed or sterilized shall be disinfected with a prolonged bath of corrosive sublimate or carbolic acid, according to the case.

Article 36. —For linen and other objects which have been washed, sterilization is not required. This, however, is obligatory for all that which comes from tuberculous patients, those suffering from anthrax and other diseases in which the morhigenous germs (spores) are not sterilized by a temperature under 194° F. The mattresses, whatever be the nature of the disease, shall be always sterilized, even after washing.

Article 37.—The municipality does not assume any responsibility for the damage which may happen during the disinfection, except in cases of manifest negligence.

Article 38.—The transport of all objects from the houses to the disinfecting station shall be effected in suitable cars, perfectly shut, and varnished inside, so that they can be washed with a solution of sublimate every journey. The return of the objects to the respective houses shall be made in cars altogether distinct from

the preceding, and exclusively destined for this sole service.

Article 39.—The payment for washing, sterilizing, etc., shall be made according to the annexed tariff of prices. For articles not included in the tariff, the Office of Hygiene will charge the same price as that charged for a similar article. In special cases a price shall be applied which exceeds by a third the repayment of the expense. The payment of the sum due to the Commune shall be made at the time of re-consignment, and by means of the municipal office making use of suitable receipt-books with counterfoils.

Article 40.—The medical attendants who omit to send a written certificate to the Office of Hygiene of the patients under their care affected with one of the diseases indicated in Article 1 of the present regulations, shall be punished according to Article 45 of the law of December 22, 1888, for the guardianship of hygiene and public health.\*

Article 41.—All infractions of each provision contained in the present regulations shall be punished according to Article 60 of the aforesaid law.†

---

\* The contraveners, according to Art. 45 of the above law, can be punished with a fine extending to 500 francs, and in grave cases with a term of imprisonment superadded, besides the greater punishments sanctioned by the Penal Code for injurious offences to persons.—TRANSLATOR.

† The contraveners can be punished with a fine of from 51 to 500 francs, always excepting the greater punishments sanctioned by the Penal Code for the offences provided by it.—TRANSLATOR.

## TARIFF.

## WASHING.

Sheets, 5 centimes each ; coverlets for single beds, 50 centimes each ; linen or cotton pillow cases, 5 centimes a pair ; night shirts, 10 centimes each ; cases of mattress or palliasse for one person, 50 centimes each ; pillow cases, 5 centimes each ; towels, 5 centimes the pair ; dusters, 5 centimes each ; window curtains, 1 franc a pair ; small window curtains, 10 centimes each ; table cloths for six persons or less, 10 centimes each ; napkins, 5 centimes the pair ; drawers, 5 centimes a pair ; handkerchiefs, 5 centimes for three ; napkins, 5 centimes the pair ; stockings, 5 centimes the pair ; socks, 5 centimes two pairs ; jerseys, 5 centimes each ; dressing gowns, 10 centimes each ; dresses, 10 centimes each ; woollen vests, 10 centimes each ; cotton vests, 5 centimes each ; wool for mattresses and pillows, 20 centimes the kilogramme.

## STERILIZATION, &amp;c.

A mattress complete for a single bed, 1 franc ; pillows, 25 centimes each ; clothing, 25 centimes the kilogramme ; linen of all kinds, 0·05 francs the kilogramme or part of a kilogramme ; the remaking of a simple mattress for one person, 1 franc ; the remaking of a mattress with bindings for one person, 2 francs ; the remaking of pillows, 25 centimes each ; the sterilization of rooms and the washing of the floor, 2 centimes for every cubic metre ; the sterilization of furniture, 25 centimes a piece, and 5 centimes for chairs ; the sterilization of carpets and woollen hangings—wool and cotton, 10 centimes the kilogramme ; the sterilization of silk and plush bed curtains, and of expensive stuffs, 50 centimes the kilogramme ; the sterilization of cotton and jute curtains, 5 centimes the kilogramme.

## SOCIETIES FOR AIDING THE WOUNDED IN WAR.

## THE RED CROSS.

The Italian Red Cross Society, constituted on the basis of the International Convention of Geneva of 1864, is intended for the assistance of the wounded and sick in war.

With this intent it enrolls and instructs the personnel in times of peace, and prepares sanitary materials of all kinds.

It is composed of members of both sexes, who pay the sum of 5 francs a year, or 100 francs for a life member. Its central seat is in Rome ; there are sub-committees in all the cities and districts of Italy.

The patrimony of the Society on January 1, 1894, was : Sanitary materials, 1,860,827 francs ; funds, 3,700,181 francs.

President : Count G. L. Della Somaglia.

General Secretary : Comm. F. Becchi.

Offices : Palazzo della Banca Tiberina, Corso Vittorio Emanuele.

#### THE ASSOCIATION OF THE ITALIAN KNIGHTS OF THE SOVRAN MILITARY ORDER OF MALTA.

This association arose in the pale of the Royal Order of Malta, after the International Convention of Geneva established the maxim of neutrality in war of the wounded and means of aid. It assists, like the Red Cross, the sick and wounded in war, electing the personnel and preparing sanitary materials.

President : Prince M. Chigi.

General Secretary : Count A. Da Mosto.

Offices : Palazzo dell' Ordine di Malta, Via Condotti.

#### SOCIETIES OF PUBLIC ASSISTANCE.

THE ITALIAN GOLDEN CROSS :—9 Via Cernaia.

It was founded in 1882 by Professor G. Catalano. At first this society had a military character, but it gradually became modified, and it now has a distinctly civil character.

Its purpose is to give—

(a) Mutual aid amongst the members ;

(b) To aid sick persons in their homes ;

- (c) The transport of the sick to hospitals or their homes ;
- (d) Ready aid on occasions of misfortune or public calamities ;
- (e) Aid to the sick and wounded in case of war.

There are four classes of members :—

1. Patrons,
2. Contributors,
3. Deserving persons,
4. Volunteers.

The voluntary members constitute the *active bands*.

#### THE WHITE CROSS.

This was formed in 1884 by ten charitable citizens, and it has a vigorous life.

Its object is—

1. To gratuitously assist during the night poor patients in their homes.
2. To transport the sick and injured in ambulances.
3. To give prompt aid in public disasters.
4. To relieve public calamities and distresses by means of medical assistance and medicines, and with other charitable works, as far as the funds of the society will permit.

For these purposes a corps of well-organized sanitary volunteers has been trained.

It has a provident fund for cases of illness.

President : Professor L. Pagliani.

The *Green Cross* and the *Blue Cross* have the same object as the *White Cross*, and are affiliated with it.

The *locale* of the *Green Cross* is in Piazza Santa Maggiore, near the hospital of Sant' Antonio.

That of the *Blue Cross* is in Via Ferruccio.

## CHAPTER X.

## FUNERAL SERVICES.

BESIDES the general regulations established by Royal Decree, January 11, 1891, Number 42, on *Sanitary Police*, the Commune of Rome have special *Regulations on the verification of deaths, autopsies, and funeral services*, which we here give in full.

REGULATIONS ON THE VERIFICATION OF DEATHS,  
AUTOPSIES, AND FUNERAL SERVICES.

## THE VERIFICATION OF DEATHS.

1. When the death of an individual, of whatever age, condition, or rank, takes place either in Rome proper or in the Campagna, within the confines of its territory, a member of the family or whosoever lives with the defunct, is obliged to notify it as quickly as possible, and, at most, within the first six hours of death, to the municipal Office of Health of the quarter in which the death happens, presenting to the same office a certificate which declares the nature of the last illness, given by the attending physician or surgeon, and which by these shall not be refused.

2. In default of relations or other persons living with the defunct, the obligation of giving the said notice belongs to the physician, surgeon, priest, midwife, or other person who has assisted the defunct in his last moments.

3. For those persons who die in public or private estab-



lishments, the notice of death, accompanied by the above-mentioned certificate as to the cause which has produced it, must be given to the Office of Health by the directors or heads of those establishments.

4. Whenever a person is found dead in any place, either public or private, and there are reasons for thinking that notice has not been sent to the municipal Office of Health, it is the duty of whosoever makes the discovery to give the said notice to the same office.

5. In cases of sudden death, and where the patient has not been attended by a physician or surgeon, through which the certificate demanded according to Article 1, cannot be tendered, the person who gives information in such circumstances shall make a special declaration.

6. When it concerns an abortive foetus, or a foetus born dead, or that has died during or soon after birth, the announcement shall be likewise accompanied by the relative certificate of the surgeon or midwife who has assisted at the parturition.

7. The clerk in the Office of Health shall register in a special book the information received of the deceased, with the particulars that are found indicated, in the same book.

8. Physicians and surgeons shall be attached to each of the sanitary offices of the quarters into which the city is divided, and the duty of verification of births as well as deaths which happen, not only in the city proper, but also in the Campagna within the limits of the Commune of Rome, is entrusted to them.

9. These physicians or surgeons are placed under the immediate dependence of the Office of the Direction of Municipal Health.

10. Each physician or surgeon verifier shall attend the respective sanitary office of the quarter, to take the invitations for the verification of births and deaths twice in the day—that is, in the morning and the afternoon.

11. Directly the physician verifier has received the call, he shall go to the residence of the defunct to perform the verification that has been entrusted to him.

12. In verifying the deaths, the physician shall ascertain the reality of the same. For this purpose the inspection that he shall make on the defunct shall not be superficial, but diligent, whence he will be able to obtain the proofs of the reality of the death. With this intent, where it is necessary, he shall also institute suitable tests, and repeat his visits to the defunct several times before giving the declaration of the verification.

13. Such declaration of the verification of death shall be made by the physician in two copies; the one he himself shall give to the Office of Health, and the other shall be left by him in the house of the defunct, leaving to the family of the latter the obligation of tendering it, and of making the regular act of notification to the Office of the Civil State, to obtain the permission for burial.

14. When there are reasons for suspecting, even remotely, that one has to deal with a case of *apparent* death, not only shall the physician verifier not give the certificate of death, but the strict obligation is incumbent upon him of performing on the person, and of himself directing, all those practices that the act prescribes for recalling to life the *apparently dead*, persisting in the same with that perseverance, without which in such cases one cannot obtain the desired result. To this end a case

furnished with all the objects useful for giving assistance in such circumstances shall be deposited in the municipal Office of Health.

15. When, from the certificate of the medical attendant or the inspection of the body, the suspicion arises that an individual has met with his death through foul play, the physician verifier is obliged to give immediate notice to the Pretura, and to add in the certificate of verification a note of this information given, according to the instructions of the Office of Civil State.

16. In like manner, through the regulations of the Office of Civil State, the physician verifier shall note in the certificate of verification the circumstance, where it exists, of *sudden* death.

17. When the physician verifier, from the inspection of a body, judges it injurious to public health that the 24 or 48 hours allowed by the law before proceeding to the burial should elapse, he shall make a special report of it, and remit it to the Office of the Direction of Municipal Health in the Campidoglio, to obtain the shortening of the above-mentioned hours.

18. When the death has happened through a contagious disease, the physician verifier is obliged to order and direct those measures of isolation and disinfection required by the sanitary laws, in regard to the tutelage of public hygiene (see *special regulations*).

19. Where the death has occurred in a hospital or in any other public establishment, the duties of the physician verifier may be delegated to one of the physicians of the establishment.

20. In like manner, when the death has happened in the most distant parts of the Communal territory in which

a parish doctor (*Medico Condotto*) lives, the verification of such death may be confided to this doctor.

#### AUTOPSIES.

21. It is not permitted to perform an autopsy, embalmment, or other operation on a cadaver, without having obtained permission from the municipal Office of Health, excepting the case in which the autopsy has been ordered by the medical authorities.

22. The permission shall be given on the written request of the relations of the defunct, who shall indicate the name of the doctor who is to perform the autopsy, and the object for which it is to be performed. If the request be made by a physician or surgeon in the interests of science, it shall be accompanied by the consent of the relations of the defunct.

23. The autopsy shall take place in the hours which are prescribed in the licence, and as a general rule in the post-mortem room at the cemetery, or in that of the *locale* of the deposit and exposure of bodies which has been established in Rome by the municipal authorities. Only in cases of absolutely exceptional circumstances shall the Direction of Health permit it in the residence of the defunct, with all hygienic precautions.

24. The physician or surgeon who has performed the autopsy is bound to give its results to the same municipal Office of Health.

25. It is not permitted, without the special authorisation of the municipal Office of Health, to remove or preserve any fetus, or any part of the human body, excepting in the interests of science.

26. The provisions of the preceding articles are not

applicable to the autopsies and anatomical preparations which are made in the Royal University or in the public hospitals on persons who die in them.

27. Autopsies, embalmments, or other operations cannot in any case be performed excepting after the verification of the reality of death, and that from this 24 hours in ordinary cases and 48 in cases of unexpected death have elapsed, unless a special licence be given by the municipal Health Office, when the two conditions of a relevant interest, which requires the dissection of the cadaver, and a premature putrefaction in the same, have been established by the physician verifier of the reality of the death.

28. The autopsy, embalmment, or other operation on the cadaver of those dying from a contagious disease shall never be permitted, excepting the particular case in which the autopsy is expressly ordered by the judicial or sanitary authorities.

#### THE CUSTODY OF BODIES AND THEIR COFFINING.

29. The bodies of persons who have died on public land, or in places open to the public, are transported to their habitations if they be known, and when the just regards of humanity and convenience permit it ; otherwise they shall be taken to the morgue.

30. In this last case they will be guarded and cared for by the municipal authorities.

31. In all other cases the custody of the defunct is confided to the members of the family or those living with the same, who shall provide that he is not left abandoned, and shall exercise all the precautions and means useful for removing all obstacles to the manifestation of life, when death was only apparent.

32. To this end it is not permitted to deprive the body of him who is supposed to be dead of his clothes, nor to remove him from the bed, nor wash him, dress him, nor carry out on the same any of those offices usually performed on a cadaver ; nor open the windows of the room where he lies in cold weather, if in the first place the verification and the declaration of the reality of death by the municipal physician verifier have not been had.

33. It is not permitted, until 24 hours after death in ordinary cases, and 48 in sudden deaths, to enclose the body in a coffin, nor to apply or cause to be applied plastic materials on the face of the same, to obtain a mask.

34. The coffin destined for the body, and without which in no case is burial permitted, nor the transport and exposition of the same, shall be gratuitously furnished by the municipal authorities to the *absolutely poor*, when their death does not occur in a public hospital, to whom such providing belongs. For all the others the coffin shall be provided at the expense of the *respective* families.

35. As a general rule the coffins should be of wood, and of a size not greater than that necessarily required. The use of lead or zinc cases is not permitted, excepting for those bodies which must be buried in a place distinct from that destined for common burials.

36. The placing of the body in the coffin and the closure of the latter shall be done by the municipal buriers appointed for each region. In case other persons wish to perform this last office to the defunct, it shall be done in the presence of one of the municipal buriers, and under his responsibility.

37. The provision of the preceding article is also appli-

cable to the bodies of those who die in the hospitals or in other public establishments.

38. Before shutting the coffin, the municipal burier, by means of an incorruptible cord, shall attach to one of the limbs of the body a small terra-cotta shield containing a number, and shall apply another little metal shield with the same number on the outside of the coffin. This shield will be supplied in each case by the municipal office entrusted with the funeral services, who will be careful to enter the corresponding number by the side of each name in the register of deaths.

39. It is expressly forbidden to the municipal buriers to receive money or any other kind of presents for the above-mentioned operations, or for any other plea, from the family of the defunct, even if the latter be wealthy, under pain of immediate loss of their position.

40. The municipal buriers, in performing the above offices, and all others confided to them in the application of the present regulations, are bound to use that reverence and that urbanity of manner which are in all cases absolutely demanded by the respect due to the dead, and by the misfortune which has stricken his family, whatever be the rank or condition. The non-observance of these obligations shall be severely punished, and shall, if repeated, cause the dismissal of the burier.

41. The municipal buriers in the exercise of their office, shall be furnished with a distinguishing mark, which will be evidence of their qualification.

#### THE TRANSPORT OF THE BODIES.

42. No funeral transport can take place unless the cemetery tax, fixed in proportion to the rank and con-



dition of the defunct, has been previously paid to the municipal authority, or a declaration of exemption from the said tax, on account of absolute indigence, has been obtained from the municipal authority.

43. The transport of bodies for Catholics takes place from the last habitation to the parish church, and then from the latter to the cemetery at Verano. For Protestants and Jews it is directly effected from the residence to the respective cemetery.

44. The transport to the church shall be effected according to the arrangements made by the family of the defunct with the parish priest, by means of a bier decently embellished, or by a special funeral car, of one of the different categories, indicated in the tariff annexed to the present regulations. This latter means will be used in those cases only in which a special request has been made to the municipal office entrusted with funeral transports, and when the payment of the relative impost has been previously paid.

45. No body can remain longer in a church than the time necessary for performing the religious service. This being finished, when the body is not immediately taken in a special car to the cemetery, it shall be deposited in the parochial mortuary chamber, to be removed to the cemetery itself in the nocturnal hours of the same day.

46. The transport of the defunct to the respective cemetery is effected either in a *common* car destined for the simultaneous transport of several bodies, or in a *special*, that is, one destined for the transport of a single body.

47. The furnishing of these cars exclusively belongs to the municipality, and all other means of transport of bodies to the cemetery is absolutely forbidden.

48. Bodies which have been collected in the Campagna by the *Confraternity of Death*, and transported by this society on a bier to the cemetery, are solely exempt from the provision of the preceding article.

49. To the municipal buriers is intrusted the duty of placing the bodies in the funeral cars destined for their transport to the place of burial.

50. The *common* funeral cars shall pass along the streets of the city only in stated hours. They begin their journey at 10 p.m. from November to the end of March, and 11 p.m. in the other months. They shall avoid as much as possible the passage along the Corso and other very frequented streets.

51. Each common funeral car is accompanied by a Communal burier. In the same the parish priest, or the priest delegated to accompany the bodies of Catholics, takes his place, or, in the case of Protestants or Jews, the minister of the relative religion.

52. For the transport to the cemetery with the *common* cars no other tax shall be paid to the municipality besides that mentioned in Article 42.

53. The *special* cars are of different categories, and, according to these, they have a more or less rich furnishing, and a more or less sumptuous service.

54. For effecting the transport to the cemetery with a *special* car, a request to the municipal office that superintends the funeral services is necessary, mentioning the category, and paying the amount according to the same, and to the tariff annexed to the present regulations.

55. The transport of the bodies to the cemetery in *special* cars shall take place in the hours that will be

established in each case by the municipal office, and they shall pass along the streets determined by the same.

56. In these funerals with *special* cars the municipal office will establish the mode in which, besides the ministers of the respective religion and the charitable associations, the friends, the relations of the defunct, the mutual aid societies, and, according to the different cases, the civil and military representatives, shall take part in the funeral procession.

57. Each funeral procession with a *special* car shall be preceded by a *Delegate of Health* dressed in mourning, and with the distinguishing mark of a ribbon of the municipal colours tied to his left arm. The same shall see that good order is kept, and that the regulations are observed ; when these are disputed, he has the right, in the exercise of his functions, to call to his assistance the Municipal Guards.

58. It is not permitted in any case for the funeral cars, either *common* or *special*, to stop on the way, even for a few moments, excepting when the circumstances absolutely require it.

59. It is forbidden to interrupt or disturb the funeral procession with vehicles, horses, or in any other manner.

60. All funeral service is absolutely forbidden for the bodies of those individuals who have succumbed to a contagious malady. These bodies shall be transported directly from the habitation to the cemetery in a special car during the hours established by the municipal Office of Health, and accompanied by those persons only who are absolutely necessary.

61. For the bodies which must be transported from Rome to other cities in the kingdom and to foreign countries, the Delegate of Health who accompanies the

funeral car shall give the regular consignment of it in the railway station to the competent official.

62. When the transport of a body takes place from Rome to one of the surrounding communes, or to another, to which it cannot be taken by rail, it shall be taken in a car expressly designed for the purpose and accompanied by the Delegate of Health, who shall give the regular consignment of the cadaver to the rightful person, according to the regulations and the prescriptions of the local authority.

63. When a body is brought into Rome from another commune in the kingdom or elsewhere, a Delegate of Health shall receive it at the railway station, and then accompany it to the place of burial, using a *special* car of the category requested.

64. When the introduction of a body into this city does not take place by the railway, but in another vehicle and through the ordinary roads, the said body, with the same vehicle, shall be transported directly to the cemetery in which the body is to be buried, and it shall be the custodian of the cemetery who shall have the consignment of it.

#### TARIFF OF THE BURIAL TAXES ACCORDING TO ARTICLE 42 OF THE REGULATIONS.

For each person of whatever class, excepting only *daily* workers and the absolutely poor :—Adults, 12 francs ; children, 6 francs.

For daily workers :—Adults, 2 francs ; children, 1 franc.

For the *absolutely* poor there is no tax according to the above-mentioned Article 42.

N.B.—In these burial taxes is included the repayment to the municipality of the expenses of the same, not only for the transport of the body to the cemetery in a *common* car, for the relative personnel that accompanies it, and for the burial, but also for the cost of the shields (Article 38), and for the coffining and all other work done by the municipal buriers in connection with the same body.

## TARIFF FOR FUNERAL PROCESSIONS IN SPECIAL CASES.

PROVISION TO BE MADE BY THE MUNICIPAL OFFICE OF FUNERAL SERVICES.	CATEGORIES.			
	I	2	3	4
A stately car with four horses richly harnessed, coachman, four footmen, and two men servants with gala livery. Two carriages to follow with coachmen in gala livery .....Francs	500			
Car with ornaments and two horses, and two carriages to follow with coachmen and two men servants in livery.....Francs		250		
Car with ornaments, with two horses, one carriage to follow, with coachman and a man servant dressed in mourning..Francs			120	
Simple car with two horses, with a coachman dressed in mourning.....Francs				25
ADDITIONAL FACULTATIVE ARTICLES FOR THE FIRST AND SECOND CATEGORIES.				
Shield with coat-of-arms, or with a device, each .....Francs	10	10		
ADDITIONAL FACULTATIVE ARTICLES FOR THE FOURTH CATEGORY.				
Carriage with the coachman dressed in mourning.....Francs				12
Special car for children .....Francs	250	100	25	

A car expressly destined for the transport of a body into another *neighbouring* commune with the presence of the delegate of health, in the car provided by Article 62 : 60 francs. For the transport into more distant communes the charge for the same car will be increased in proportion to the distance.

## CEMETERIES.

The Necropolis of Rome is situated outside the Porta S. Lorenzo, in the locality called Campo Verano.

Since 1870 the services in connection with the burial of bodies has been assumed by the Office of Hygiene, which provides for the necessary enlargements of the cemetery, and confides the custody of the place to an ample staff of caretakers and gardeners, under the immediate control of an inspector and his assistants. In 1883 an enlargement of the cemetery was decreed, and it was provided that within its precincts special cemeteries, in separate divisions, should be made for those belonging to other religious persuasions differing from the Catholic. With this the closure of the Jewish cemetery on the Aventine has been rendered possible. The enlargement instead of the Protestant cemetery at the Testaccio was decreed under special conditions.

The enlargement of the small suburban cemeteries of the Via Portuense and S. Sebastiano have also been provided for.

#### THE PROTESTANT CEMETERY.

This cemetery, situated close to the Porta S. Paolo, is usually called the English Cemetery, and it is for the burial of those Protestants of different nationalities who die in Rome. The sanitary regulations as to burial, etc., are exactly the same as those already given for the municipal cemetery at Verano, but the administration is different. This is entrusted to a committee consisting of representatives of the various European and American nations, under the chairmanship of the German Ambassador.

The cost of a grave for one person in perpetuity is 200 francs, which may be paid at once, or 65 francs can be paid at the time of burial and the remainder by instal-

ments in ten years. If the defunct be very poor the ground is given gratuitously, but in this case the administration has the right of exhuming the body after ten years and placing the bones in the Ossarium.

For the erection of monuments a tax must be paid to the treasury of the cemetery. This tax is divided into classes, according to the size of the monuments, and is as follows : The first class, 16 francs ; the second, 44 francs ; the third, 70 francs ; and the fourth, 135 francs.

All information as to burials, etc., can be had from Signor John Trucchi, the superintendent of the cemetery, 17, Via Quattro Fontane. Signor Trucchi is also the superintendent of the Campo Verano.

#### CREMATION.

A crematorium exists at the cemetery of Campo Verano, which was built by the Cremation Society in 1883 on an area temporarily and gratuitously granted it. This society has met with very little success in Rome, and the number of cremations is decreasing yearly.

Each cremation must be authorized by the Office of Civil State. The society performs the cremations at the following charges :

1st. If the transport of the body be made with service of the first class, 100 francs ;

2nd. If with that of the second, 60 francs ;

3rd. And that of the third, 40 francs.

The expenses of transport and the municipal taxes, besides the Government taxes for those bodies coming from other communes, must be paid by the family of the defunct.



ROOMS FOR THE EXPOSITION OF UNKNOWN  
BODIES AND FOR JUDICIAL AUTOPSIES.

In 1883 rooms for the exposition of unknown bodies and for judicial autopsies were established. They have been built on the extreme point of the *Isola Tiberina*, where in ancient times a temple was erected to Esculapius. They are furnished with all necessary requirements. One enters them from the Piazza S. Bartolomeo all' Isola.

## CHAPTER XI.

SCIENTIFIC AND PROFESSIONAL AUTHORITIES  
AND INSTITUTIONS.

## THE ANCIENT MEDICAL SCHOOL.

It appears the first medical school that existed in Rome dated from the fifth century from the foundation of the city, and traces of it have remained in a mosaic existing in the Villa Albani (Visconti N. 663—Orelli, 4226), and in some inscriptions, where there is an exact indication of such an institution :

M. LIVIO · CELSO · TABVLARIO · SCHOLÆ · MEDICORVM

or : —

T. AVRELIVS · TELESPORVS · SCRIBA · MEDICORVM.

It is believed that it was situated in the Esquiline, and that they followed there the methods of the clinical schools of our day, in which the students accompanied the professor to the bedside of the patient and examined him according to the prescribed rules.

Martialis thus narrates a visit made him by Symmachus and his pupils :

*Languebam ; sed tu comitatus protinus ad me  
Venisti, centum, Symmache, discipulis  
Centum me tetigere manus Aquilone gelatæ.*

To estimate at its just value the importance of this institution, as an indication of civilization, it is sufficient to consider that after its disappearance it is necessary to come down to the sixteenth century to find the public teaching of medicine at the bedside of the patient. In 1543 the first medical clinic in Europe was instituted at Padua.

## THE PRESENT MEDICAL SCHOOL.

President of the Faculty.....	Toscani, Professor Davide
Human Anatomy.....	Todaro, Professor Francesco
Human Physiology.....	Luciani, Professor Luigi
Materia Medica.....	Colasanti, Professor Giuseppe
General Chemistry.....	Cannizaro, Professor Stanislao
Physics .....	Blaserna, Professor Pietro
Zoology .....	Carrucio, Professor Antonio
Botany.....	Pirotta, Professor Romualdo
Clinical Medicine .....	Baccelli, Professor Guido
Propædæutic Clinical Medicine	
	Rossoni, Professor Eugenio
Clinical Surgery.....	Durante, Professor Francesco
Clinical Oculistics.....	Businelli, Professor Francesco
Clinical Dermo-Syphilopathy.....	Campana, Professor Roberto
Clinical Obstetrics.....	Pasquali, Professor Ercole
Clinical Otistries.....	De Rossi, Professor Emilio
Clinical Psychiatries .....	Bonfigli, Professor Clodomiro
Clinical Neuropathology .....	Sciamanna, Professor Ezio
Clinical Pædiatries.....	Concetti, Professor Luigi
Legal Medicine .....	Toscani, Professor Davide
Pathological Anatomy .....	Marchiafava, Professor Ettore
General Pathology.....	Valenti, Professor Antonio
Experimental Hygiene .....	Celli, Professor Angelo
Medical Pathology.....	Leoni, Professor Ottavio
Gynæcology .....	Marocco, Professor Cesare
„ .....	La Torre, Professor Felice
Special Medical Pathology...	Pensuti, Professor Virginio
Technical Microscopy.....	Magini, Professor Giuseppe
Surgical Anatomy .....	Oecchini, Professor Francesco
Propædæutic Clinical Surgery.....	Mazzoni, Professor Gaetano

## THE INSTITUTE OF EXPERIMENTAL HYGIENE.

VIA<sup>MA</sup>A. DEPRETIS, CORNER OF VIA PALERMO.

This Institute was founded by Professor Tommasi Crudeli, in the year 1880, and was at first attached to the Institute of Pathological Anatomy, but in 1885 it was removed to its present site.

Since 1889 it has been under the direction of Professor Celli, who gives there a course of lectures on practical hygiene to those medical men who are desirous of obtaining a special degree in Public Health. Professor Celli also superintends the teaching in the chemical and bacteriological laboratories. There is an excellent library, and a museum in connection with the Institute, and the Municipal Antirabic Institute is also situated there.

## THE ROYAL MEDICAL ACADEMY.

The institution of this academy is recent, as it took place in the year 1875. However, before this date private reunions of scientists and young doctors were held. In the seventeenth century a *Medical Club* was founded by Salvatore Floridi, and another was formed in the Consolazione Hospital by Guglielmo Riva in 1650.

In 1679 Guglielmo Ravaglioli instituted the *Roman Medical Congress*, and Trionfetti of Bologna the *Special Academy of Botany*. In the hospital of S. Spirito, the *Lancisian Academy* was formed, and later on, in 1856, the *Academy of the Friends of Medical Science*, which had for its object the study of diagnostics and pathological anatomy. Being suppressed after about a year of life, it arose again under the name of *The Medical Conference*, and it held its meetings in a room of the University,

extending its studies even to thermal balneotherapy and the analyses of the mineral waters of Italy. It was also dissolved by the authorities in 1863; it again reunited in the direction of the *Medical Journal of Rome*, and it was at this reunion that the idea of founding the institution at Anzio for scrofulous and rachitic children was born. The same society gave birth to the *Archives of Medicine, Surgery and Hygiene*, and in 1869 organised a system of monthly reports and bulletins on the diseases dominating in Rome. Finally, after 1870, the *Roman Committee of the Italian Medical Association* was constituted, which arranged for the fifth general congress of this association, which met in Rome in the year 1871. Then, on March 21, 1875, the *Medical Academy of Rome* was solemnly constituted.

## THE LANCISIAN SOCIETY OF THE ROMAN HOSPITALS.

### THE HOSPITAL OF SAN GIACOMO.

The *Lancisian Society of the Hospitals of Rome* was founded with this name in the year 1881 (February 19). Its true origin, however, dates back to 1877. In fact, in the preface of the first report of the society, mention is made of the constitution of an *association of the junior medical staff of the Roman hospitals* in August, 1887. The assistant and sub-assistant physicians, the deputy and sub-deputy surgeons, and the internal supernumeraries regularly inscribed in the hospitals were founders and members. The object of this association was twofold - *scientific and professional*; that is, to utilize the enormous material that the numerous hospitals of Rome can place

to the profit of the science and art of medicine, and to give moral support to the individual when his rights are neglected or interfered with. The association was initiated under good auspices. All those who were entitled by the statute entered their names on the roll of the society.

The municipal authorities placed a room in one of the Communal schools at their disposal for the meetings. At these reunions matters both of scientific and professional interest were discussed.

Some questions regarding the hospitals of Rome produced friction, and the primary fervour gradually lessened. The serene spheres of science were disturbed, and they received a fatal counter-blow.

Consequently, at the meeting held on December 13, 1879, a committee was appointed for the purpose of studying the causes of the decadence of the association, and to propose opportune remedies.

This committee presented a report to the following effect :- That the discussion of matters of professional interest should be abandoned, and that greater impulse should be given to questions of scientific importance. The association approved of these proposals, and since that time its object has been purely scientific. It is now in a flourishing condition.

About this period the desire arose in the minds of many of the members of vindicating the glorious traditions of the academy founded in 1814 by Lancisi, and revived in 1856 in the praiseworthy *Assembly of the Friends of Medical Science*.

On February 19, 1891, *The Association of the Junior Medical Staff of the Roman Hospitals*, maintaining

unaltered the fundamental principles of its statute, assumed the title of *The Lancisian Society of the Roman Hospitals*.

#### THE MEDICAL SOCIETIES OF THE SPECIALISTS.

Besides the institutions already mentioned, all of which have a local character, some few years ago arose societies of a national character, formed on the principle of scientific specialisation.

These societies hold their annual congresses in Rome, and are attended by the learned from every part of Italy.

They are :—

The Italian Society of Internal Medicine ; the Italian Society of Surgery ; the Italian Society of Dermatology ; etc., the Italian Society of Laryngology, etc. ; the Italian Society of Obstetrics.

#### THE ORDER OF DOCTORS OF THE PROVINCE OF ROME.

This society has for its object the maintenance of the decorum of the class and the guardianship of professional interests.

It is governed and represented by a council of the order, which has its seat in Rome.

This council issues orders and judgments on all subjects relating to professional decorum and practice ; it equitably and amicably settles subjects of dispute between colleagues inscribed on the roll, and also between the latter and those colleagues who do not object to the intervention and arbitration of the council ; it maintains with its influence the rights belonging to the order, and everywhere guards its moral and material rights, and also endeavours to make professional work to be in every case justly valued ; it opposes with every legal means the



unprofessional or secret exercise of branches of the healing art.

Honorary President—Professor G. Baccelli.

President—Professor F. Durante.

Vice-President—Dr. G. Bastianelli.

#### THE LANCISIAN LIBRARY.

Monsignor Giovanni Maria Lancisi, *Cameriere Segreto* and chief physician of Clement XI., at one time ordinary physician of the hospital of S. Spirito, who died in 1720, gave his splendid library of 20,000 books on medicine, mathematics, botany, anatomy, and other works in connection with the medical and natural sciences to the above hospital for public use. The opening of the library took place in the year 1716, in the presence of the Pontiff Clement XI. It was subsequently increased by the gift of very rare books, made by Louis XI. of France.

The library is still situated in the palace of S. Spirito, in proximity to the hospital of the same name. It is open to the public, but is very little frequented on account of its out-of-the-way position, and the scarcity of modern books.

It is at the present time under the control of the Minister of Public Instruction, who, it is to be hoped, will provide for the reorganisation of this institution.

When the Policlinico Umberto I. will have made Rome the centre of the Italian medical school, it will be necessary to have a branch of the Lancisian Library in connection with it, so that the cultivators of the science may attend there with convenience. The goodwill of the Minister and the well-known generosity of the Roman and Italian doctors will be able in a short time to restore the Lancisian Library to its ancient splendour.

# INDEX.

- Academy, Royal Medical, 184.  
 Acqua Acetosa, 59.  
 Acqua Felice, 52.  
 Acqua Marcia, 55.  
 Acqua Paola, 54.  
 Acqua Santa, 53.  
 Acqua Vergine, 50.  
 Acque Albule, 60.  
 Agricultural colony, 144.  
 Air, purity of, 7; supposed unhealthiness of, 3.  
 Analysis of the modern waters, 50; subsoil waters, 42-45; Tiber waters, 39-40.  
 Antirabic Institute, 139.  
 Apartments, rent of unfurnished, 85.  
 Aqua Alessandrina, 49.  
 Aqua Algenziana, 49.  
 Aqua Alsentina od Augusta, 47.  
 Aqua Anio (Novus), 48.  
 Aqua Anio Vetus, 46.  
 Aqua Antoniana, 49.  
 Aqua Appia, 45.  
 Aqua Claudia (Cærulea), 47, 50.  
 Aqua Julia, 46.  
 Aqua Marcia, 46.  
 Aqua Severiana, 49.  
 Aqua Tepula, 46.  
 Aqua Traiana, 49.  
 Aqua Virgo, 47.  
 Aqueducts, ancient, 6; see also under heads of various Aquæ.  
 Arms and legs, 146.  
 Asylum for crippled, 145.  
 Asylum for old people, 143, 144.  
 Asylum Margherita di Savoia, 145.  
 Asylum, Marine, 147.  
 Atmospheric pressure, 20.  
 Autopsies, 170, 171.  
 Baccelli on malaria, 31, 32.  
 Bacon, 94.  
 Barometrical indications and rain, 20.  
 Baths, 61; ancient, 6, 80; absence of public, 80; zoothermic, 139, 140.  
 Beef, 92.  
 Birth-rate, 108.  
 Blind, Institute for the, 145.  
 Brada, 92.  
 Brefotrofio, 147, 148.  
 Buildings in middle ages, 81; modern, 81; insufficiency of, 84.  
 Burial taxes, 177.  
 Camillus Furius on the hygienic state of Rome, 4, 5.  
 Campagna, depopulation of, 7; malaria in, 78; state of, 74, 75.  
 Cattle, 92; tuberculosis of, in Milan, 100.  
 Celli, Professor, on Tiber waters, 40; subsoil waters, 42.  
 Cemeteries, Campo Verano, 178; Protestant, 179, 180.  
 Charitable institutions, 143-147.  
 Chemical composition of water supply, 58.  
 Cicero and the Ligurians, 15.  
 Clarke, Sir James, on the climate of Rome, 103.  
 Clement VII. and the Tiber water, 39.  
 Climate and modification of the body, 15.  
 Climate of Rome, 1, 20, 104, 109; compared with the Riviera, 82.  
 Climatic station, requirements of a, 105, 106.  
 Cloaca Maxima, 42, 65, 67.  
 Coldest months in Rome, 110.  
 Confining of the dead, 172, 173.  
 Communal sanitary deputation, 88.  
 Conditions, economic, and mortality, 14.  
 Confraternity of death, 175.  
 Conscript Fathers, 5.  
 Cornelian law, 87.  
 Cows, milch, regulations as to, 99; tuberculin test for, 99.  
 Cremation, 180.  
 Crippled, asylum for, 145.  
 Custody of the dead, 171, 172.  
*Curatores Cloacarum*, 66.  
 Dead, confining of, 172, 173; custody of, 171, 172; transport of, 173.  
 Deaf and Dumb Institution, 146.  
 Death-rates, see Mortality.  
 Deaths among English-speaking persons, 108.

- Deaths, verification of, 166-170.  
 Decadence of Rome as a health resort, causes of, 104, 105; not justifiable, 104.  
 Depopulation of Rome in summer, 74.  
 Dionysius of Halicarnassus, 4.  
 Diseases, avoidable, 13; infective and contagious, regulations for, 152-162.  
 Diseases benefited by the climate of Rome, 116.  
 Disinfection service, 152.  
 Dispensaries, ophthalmic, 138; contagious, 138.  
 Dispensary, for blood, 139; Trastevere children's, 137; the Esquiline, 138.  
 Dormitories, public, 150, 151.  
 Embankment of Tiber, 66, 106.  
 English Nursing Sisters, 140.  
 Exclusion from military service, 16.  
 Fish, 07; sale of, 98.  
 Flushing tanks, 66.  
 Foods, 87, 112; ancient laws in relation to, 87; inspection of, 89.  
 Form for notification of infectious diseases, 154; for admission of lunatics, 136.  
 Fountains, public, 61, 62.  
 Frontinus and the Tiber waters, 39; and ancient aqueducts, 45-50.  
 Frosty days, 110.  
 Funeral services, 166-180.  
 Fungi, regulations as to sale of, 101; dry, 102.  
 Gales, 27, 28.  
 Gardens, public, supposed humidity of, 18; in relation to malaria, 9; scarcity of, 79.  
 Glanders, human, 95.  
 Goats' milk, 101.  
 Gregory XIII. and the Tiber waters, 39.  
 Healthiness, relative, of different quarters of Rome, 17; of Jews' quarter, 18.  
 Health resort, Rome as a, 103-116.  
 Heat in summer, 78.  
 Herodotus, 15.  
 Home, St. Paul's, 140.  
 Horseflesh, 94; sale of, 96.  
 Hospitals, the :—  
   Bambin Gesù, 128.  
   Clinica Chirurgica, 126.  
   Consolazione, 122, 123.  
   Fate-bene-fratelli, 127, 128.  
   Formari, 13.  
   German, 132.  
   Hospitals, the :—  
     Military, 131; of S. Croce in Gerusalemma, 131.  
     Policlinico, 132, 133.  
     S. Antonio all' Esquilino, 124.  
     S. Gaia, 122.  
     S. Giacomo in Augusta, 122.  
     S. Giovanni, 124-126.  
     S. Lorenzo in Miranda, 130.  
     S. Maria e di S. Gallicano, 126, 127.  
     S. Maria in Capella, 128, 129.  
     S. Rocco, 129.  
     Santo Spirito in Sassia, 119-122.  
     Spanish, 132.  
     Torlonia Ophthalmic, 130.  
 Hospitals, maternity, 137.  
 Hospitals, notes on the, 140-142.  
 Hospitals, private, 140.  
 Humidity, relative, 21, 22, 111.  
 Hygiene, institute of Experimental, 184.  
 Hygiene, Office of, 117.  
 Hygienic services, 117.  
 Jews' quarter, healthiness of, 18.  
 Infectious diseases, regulations for, 152.  
 Inhabitants, ancient, of Palatine and Capitoline hills, 4.  
 Institute, Antirabic, 139.  
 Institute, Deaf and Dumb, 146.  
 Institute of Hygiene, 184.  
 Institute of S. Alessio for the Blind, 145.  
 Institutions, charitable, 143-147.  
 Institutions, nursing, 140.  
 Invalids, suggestions to, 113-116.  
 Kid, 94.  
 Knights of Malta, 164.  
 Laboratories, chemical, 89.  
 Lais, Father, on probabilities of rain, 20; on gales, 27.  
 Lake Curtius, 4.  
 Lamb, 93.  
 Lanciani on number of ancient baths, 80; on spring waters, 41.  
 Lancian Society, 185; library, 188.  
 Laws, ancient hygienic, 5.  
 Lazzalettos, 151.  
 Livy and Camillus Furius, 4.  
 Lunatics, form for admission of, in Manicomio, 136; rules for in Manicomio, 135; treatment of in XVIth century, 133.  
 Macellum Augusti, 89.  
 Macellum Lirice, 89.  
 Malaria, 3, 29, 38, 104, 108; ancient precautions against, 3; how to pro-

- tect from, 36; immunity of the  
 Romans from, 29.  
 Malarial parasite, entrance of into  
 the body, 31; author's theory of, 35;  
 Manson's theory of, 35.  
 Malta, Knights of, 164.  
 Manicomio, 133-136.  
 Marine Asylum, 147.  
 Marino-Zucco on analysis of subsoil  
 waters, 42-44.  
 Mattatoio, 89, 90; sanitary vigilance  
 in, 91.  
 Meat, amount of, consumed in Rome,  
 98.  
 Medical aid in city, 118; of Agro  
 Romano, 119.  
 Medical societies of the specialists,  
 187.  
 Medical School, ancient, 182; present,  
 183.  
 Meteorological table, 21.  
 Miasma, paludial, 3, 7.  
 Military service, exclusion from, 16.  
 Mineral waters, 59, 60.  
 Mists, 2, 112.  
 Months, coldest, 110; hottest, 110.  
 Morgue, 181.  
 Mortality from malaria, 31; from zy-  
 motic diseases, 10-12.  
 Mortality in Italy, 13.  
 Mortality in Rome & foreign capitals  
 compared, 8, 9.  
 Mortality subordinate to economical  
 conditions, 14.  
 Mutton, 93.  
 Necropolis, 178.  
 Nero and the great market, 89.  
 Nocturnal medical service, 118.  
 Notes on the hospitals, 140.  
 Notification of infectious diseases, 152,  
 155.  
 Nursing institutions, 140.  
 Nursing Sisters, English, 140.  
 Nurses, wet, 148.  
 Order of doctors of the Province of  
 Rome, 187.  
 Paul III. and the Tiber water, 39.  
 Pharmacies, nocturnal, 118.  
 Policlinico, 132.  
 Population, amount of the, 108; den-  
 sity of, 83, 84; in ancient times, 6.  
 Pork, 94.  
 Poultry, 97.  
*Prefectus Annonæ*, 87.  
*Prefectus Urbis*, 87.  
 Pressure, atmospheric, 20.  
 Procopius on the ancient waters, 50.  
 Protestant cemetery, 179.  
 Public dormitories, 150, 151.  
 Public gardens, 18, 19, 79.  
 Quarantine houses, 151.  
 Rainfall, 20, 22; 111.  
 Red Cross Society, 163.  
 Regulations against the diffusion of  
 infectious diseases, 152-163; for  
 autopsies, 170, 171; for funeral  
 services, 171-178; for verification of  
 deaths, 166-170.  
 Rent of unfurnished apartments, 85.  
 Residence, choice of, 114.  
 Robustness, physical, of the Romans,  
 14; of ancient Romans, 6.  
 Rome and its absolute healthiness, 1.  
 Rome as a health resort, 103-116.  
 Rome as a summer residence, 73-81.  
 Rome as a winter residence, 81-83.  
 Rome, climate of, 1, 20, 104, 109.  
 Rome, situation of, 1, 3, 106, 107; sub-  
 soil of, 63, 107.  
 St. Alessio, Institute of, for the Blind,  
 145.  
 St. Cosimato Asylum for the Aged, 143,  
 144.  
 St. Gregorio Agricultural Colony, 144,  
 145.  
 St. Paul's Home, 140.  
 Sanitary Stations of the Agro Romano,  
 119.  
 Sardinia, the, 95, 96.  
 Scientific authorities and institutions,  
 182-188.  
 Scirocco, 25, 110.  
 Secchi, Father, on the climate of  
 Rome, 2; on the temperature, 24.  
 Service, Medical, of the Agro Romano,  
 119.  
 Service, military, exclusion from, 16.  
 Service, nocturnal medical, 118.  
 Services, disinfection, 152; funeral,  
 166-178; hygienic, 117.  
 Sewerage collectors, 67.  
 Sewerage of ancient Rome, 5, 6, 64, 65;  
 of modern Rome, 63-72; of Traste-  
 vere, 70.  
 Sewers, ancient, 65, 65.  
 Sewers, main, 68-70; flushing of, 71.  
 Sunny days, 22.  
 Societies for aiding the wounded in  
 war, 163, 164.  
 Societies of public assistance, 164, 165.  
 Society, the Lancianian, 185, 187.  
 Soil, conditions of the, 63.  
 Specialists, the medical societies of,  
 187.  
 Subsoil, formation of the, 107.

- Subsoil waters, 40, 44; chemical composition of, 42.  
Summer, Rome in, 73-81.  
Swimming club, 40.  
Table, meteorological, 21.  
Tariff for disinfection of bedding, &c., 163; for funeral processions, 178; for washing infected linen, 163.  
Tarquinius Priscus and ancient sewerage, 65.  
Tasso, 15.  
Temperature, 21, 23, 24, 110.  
Tiber, embankment of, 66, 106; valley of, 63.  
Tiber waters, chemical and bacteriological examinations of, 40; pollution of, 40; potability of, 39.  
Tiberius and the price of foods, 87.  
Titinius and the ancient laws as to foods, 87.  
Tomassi-Crudeli and the healthiness of Rome, 8; on malaria, 32; on spring waters, 41.  
Tramontana, 25, 109.  
Trastevere, sewerage of, 70.  
Trees, scarcity of, 79.  
Tuberculin test, 99.  
Vaccination regulations, 148-150.  
Veal, 92, 93.  
Velabro, 3.  
Verification of deaths, 166-170.  
Vigili sanitari, 89.  
Waring system of sewerage, 65.  
Waters, ancient, 45-50; quantity of, 50.  
Waters, mineral, 59.  
Waters, modern, 50-58; analysis of (note), 50; bacteriological examination of, 52, 57; chemical composition of, 58; daily amount of, 58.  
Waters, spring, 41.  
Waters, subsoil, 40-44; analysis of, 42, 43.  
Waters, Tiber, 39; chemical and bacteriological examination of, 39, 40.  
Wet-nurses, 148.  
White Cross Society, 165.  
Wind, changes of, 25; general direction of, 21; velocity of, 25, 109.  
Winds, 23.  
Wines, 102.  
Winter, Rome in, 81-83; temperature in, 82.











